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The Pandemic Through Children's Drawings: Visual Expression of Emotions Related to Covid-19 and the Quarantine Process

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ABSTRACT

COVID-19, which emerged in 2019 and spread rapidly worldwide, affected all individuals socially and emotionally. It is thought that children in the age of rapid development who are more open to environmental effects are more affected by this situation. It is essential to determine the views and perceptions of children regarding this process. Therefore, this study examines how children make sense of COVID-19 and the quarantine process. The study group consists of children aged 5-6 living in the Gaziantep province of Türkiye. It was carried out in the phenomenological method, one of the qualitative research methods. In the research, data were collected through interviews and document analysis. Children's drawings and interviews with them were analyzed through content analysis. The findings obtained from the study revealed that children's drawings and views were similar; children perceived COVID-19 as unfavorable and had negative emotions. It was seen that they reflected their views and feelings about their family relations, emotional states, and how they spent the quarantine process during the quarantine process.

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INTRODUCTION

Death and material and moral losses resulting from natural disasters that disrupt or prevent the expected life of individuals or societies and cause loss of life and property are situations that cause crisis and have short and long-term psychological effects on the individual (Gassman-Pines et al., 2020; Gentry, 1994; Idoiaga Mondragon et al., 2021; Liu et al., 2020; Walsh, 2012; Yule et al., 2000). It is emphasized that individuals with daily life changes, such as having to live an inactive, restricted life in a constant home environment, are affected negatively, especially mentally and physically, by fear, anxiety, and curfews related to the disease caused by the COVID-19 epidemic (James Riegler et al., 2020; Li et al., 2020; Liu & Doan, 2020; Prime et al., 2020).

In particular, this situation will affect children who are in a rapid development period more than adults (Lieberman et al., 2011; Sprang & Silman, 2013) and have adverse effects on children's mental health and well-being, including high levels of anxiety, depression and stress symptoms (Badulak et al., 2021; Duan et al., 2020; Liu & Doan 2020; Oosterhoff et al., 2020; Prime et al., 2020; Ravens-Sieberer et al., 2021; Saurabh & Ranjan, 2020;).

It has been revealed that traumatic or stressful situations experienced in the past years negatively affect adults and children (Osofsky et al., 2020). It is reported that Hurricane Katrina negatively affected adults and children with high rates of depression, anxiety, post-traumatic stress disorder, and family relationships. It has been revealed that epidemics such as severe acute respiratory syndrome (SARS) and the H1N1 epidemic affect individuals' life and mental health (Heymann et al., 2015; Lee et al., 2007; Liao et al., 2014; Jalloh et al., 2018; James Riegler et al., 2020; Mak et al., 2009; Patrick et al., 2020; Peng et al., 2010; Riegler et al., 2020; Roterman, 2020; Taha et al., 2009; Wang et al., 2011, Xie et al., 2020; Yeung et al., 2017). Studies on Covid 19 show that this process affects children's mental health and that children experience stress, fear, and anxiety (Alisinanoğlu et al., 2020; Andrés et al., 2022; Courtney et al., 2020; Lades et al., 2020; Patrick et al., 2020; Uzun et al., 2021; Xie et al., 2020).

Considering that the stress and distress experienced in the early years have an impact on the mental and physical health of individuals (Shonkof & Garner, 2012), determining the perceptions of children regarding the Covid process, carrying out supportive studies in the early years, and taking preventive measures in similar situations are seen as a critical situation in terms of public health. Most of the studies on the Covid process (Choobdari et al., 2020; Lavigne-Cerván et al., 2021; Loades et al., 2020; Morgül et al., 2020) are related to older children, and these studies also examine the emotional states experienced by children. Also, the critical point is that studies on children's views directly on their experiences with Covid and the quarantine process are minimal (Abdulah et al., 2020; Martinerie et al., 2021; Mira Vasileva et al., 2021) and importantly, the data was found to be based on the opinions of adults. For this reason, it is thought that it is essential to reveal children's experiences regarding the Covid process and these experiences with their views. Based on this view, the following questions will be answered in this study:

1. How do children describe their experiences with Covid?
2. How do children describe their experiences of the quarantine process?
3. How do children describe their feelings during the covid and quarantine process?

Effects of Covid-19

Covid-19, which negatively affects the lives of all individuals worldwide, has brought stress and trauma. The COVID-19 pandemic has caused governments to implement disease containment measures such as school closures, social distancing, and quarantine. Children and adolescents have experienced prolonged physical isolation from their peers, teachers, extended families, and community networks (Loades et al. 2020). Covid has been shown to have a tremendous impact on society and children and adolescents in particular (Fainardi et al., 2022; Shen et al., 2020).

Although children and adolescents are less affected by illness and death, restrictions imposed by governments around the world have profoundly affected their daily lives, including their mental and social health (Fong & Iarocci, 2020; Shen et al., 2020). The covid process that started on March 11, 2020, in Turkey, has created long-term social, economic, cultural, and especially education restrictions. Long-term closures replaced the short-term closures that started between 10-12 April 2020 with the rapid spread of COVID-19. The closure period was implemented between April 29 and May 19, 2020, and the long-term quarantine process began. This situation caused limitations in many areas. (Shen et al., 2020). Numerous cross-sectional and longitudinal studies have now been published on the effects of the COVID-19 pandemic on mental health in adults, such as increased anxiety, depression, suicidal ideation, and (post-traumatic) stress levels, decreased psychological well-being, and high rates of sleep problems. However, Loades et al. (2020), in their review study, 63 studies were conducted on children, and only 5 of these studies were directed to early childhood children (5-9 years 1 study, 6 years 1 study, and 5 years 2 studies), and these studies showed that children's social and emotional effects were studied. Grandinetti & Esposito (2022) Osofsky, JD, Osofsky, HJ, & Mamon, LY (2020) High numbers of COVID-19 cases and deaths, economic difficulties, uncertainty about the future, and containment of the spread of the virus. All of the approaches necessary to take action play a critical role in the epidemic's short- and long-term social and psychological impact Covid-19 pandemic. He states that inequalities based on race and socioeconomic status affect infection and death rates and the steps needed for recovery. Therefore, the impact of Covid on children needs to be examined based on children's experiences and in different cultural contexts.

Drawing as a Means Of Expression

Language mediates the transmission of emotion and thought through words. However, communication is expressed through words and unconscious ways such as gestures, sitting, walking, dancing, writing, drawing music, and art. Like other representations, drawings are seen as ways of understanding how people see their world (Guillemin, 2004) and as a means by which the individual expresses his thoughts and feelings symbolically on paper (Klepsch & Logie, 1982). Symbolic systems, primarily language, are used to convey thoughts (Vygotsky, 1962), and children's drawings are an important means of expression as a symbolic system (Gardner, 1982). Piaget (1973) states that children struggle to verbalize their thoughts about abstract concepts and actions. These views have led to the development of interest and views that children use drawings as a symbolic language (Anning, 1999; Brooks, 2009a; Hall, 2009; Hopperstad, 2008; Jolley, 2009; Klepsch & Logie, 1982; Matthews, 2003; Papandreou, 2014; Pinto et al., 2011; Wright, 2007). In addition to conveying what they see around them through drawing, children also convey feelings and thoughts (Brooks, 2009a; Coates and Coates, 2006; Matthews, 2003; Pinto et al., 2011; Papandreu, 2013; Wright, 2007). Drawing can be a tool for remembering and expressing previous experiences and information, elaborating and organizing new information (Papandreu, 2013).

It is emphasized in the literature that revealing how children interpret and evaluate their experiences can provide a basis for interventions (Broadbent et al., 2019; Crick & Dodge, 1994; Pynoos & Eth, 1986; Wesson & Salmon, 2001;). However, information about children, mainly their negative experiences, is generally obtained through the observations of parents or teachers (Broadbent et al., 2019). Studies suggest that parents are not sufficient to determine their children's emotions accurately. There are findings indicating that parents are among those involved in emotional problems or that parents cannot interpret their children's emotions correctly due to reasons such as not understanding or underestimating their children's emotions (Gordon & Wraith, 1993; McCloskey et al., 1993; Steward et al., 1996). It is also stated that the short and probable coding of children's narratives of their experiences and emotional states cannot provide sufficient information to adults (Fivush & Hudson, 1990). For this reason, drawing allows children to concretize what they remember. It is seen as an evaluation tool used for many years and gives reliable results for children to express their feelings and thoughts.

Children can express their feelings directly as well as indirectly in their drawings. Research has identified three main types of meaningful drawing strategies that children use alone or in combination to convey affective information. Actual strategies are observable markers of emotion, such as smiling to express happiness or crying to portray sadness. Unreal strategies are those in which, like a drooping flower, the content is altered to convey mood (Papandreu, 2013; Picard & Gauthier, 2012). It has been revealed that there is a relationship between each color, how it is used in children's paintings, and their emotional reactions (Ainsworth et al., 1993; Berith Wennström et al., 2011; Burkitt et al., 2003; Clathworthy, 1981; Clathworthy et al., 1999; Kwvallek et al., 1988; Linderman, 1997; Mahnke & Mahnke, 1993; Malchiodi, 2005; Picard et al., 2012). Lines in drawings, size, and thickness of lines (Klepsch & Logie, 1982; Koppitz, 1968; Jolley et al., 2004; Picard et al., 2007; Rasband, 1997) revealed in studies conducted with both adults and children that positive or negative emotion affects the drawing dimension (Broadbent et al., 2009; Burkitt & Barnett 2006; Chong et al., 2013; Hoogerwerf et al., 2012; Látos et al., 2012; Látos et al., 2015; Plousia & Bonoti, 2014; Reynolds et al., 2007; Reynolds, 2009; Tiemensma et al., 2012).

The placement and distance in children's drawings reflect the importance children attach to events, situations, etc., and the child's emotional attitude towards these figures (Bahcivan-Saydam, 2004; Burkitt, 2000; Bombi et al., 2007; Bombi & Pinto 1994; Chandler & Johnson, 1991; Di Leo, 2015; Koppitz, 1968; Machover, 1949; Malchiodi, 2005; Parsons, 1995). Decreases such as short arms, small figures, and figures without hands are considered emotional indicators (Carroll & Ryan-Wenger, 1999; Koppitz, 1968; Koppitz, 1984). Winston, Kenyon, Stewardson, and Lepine (1995) state that the objects in children's drawings are also symbolic tools in conveying children's emotions, such as the presence of leaves, trees, fruits, the sun, and the blue sky, and the interaction between objects and people.

Drawing as an Assessment Tool

The growing interest in children's drawings and their being a means of expression has led to the analysis of drawings. Children's drawings focused on what and how children drew in the late 19th and early 20th centuries and how these pictures could be used as a tool to measure intelligence and cognitive abilities (Barnes, 1893; Péter-Szarka & Pethő, 2010). With the beginning of the interest in children's drawings, children's drawings began to be discussed with their developmental, clinical, or artistic aspects (Cox, 1993; Freeman & Cox, 1985; Kellogg, 1970; Matthews, 2003; Pinto et al., 2011). Later, human drawings began to be seen as a reflection of expression and personality traits (Alschuler & Hattwick, 1943, 1947; Burkitt et al., 2005; Goodenough & Harris, 1950, 1963; Machover ,1949). Lowenfeld and Brittain used the developmental aspect of children's drawings. In contrast, Vane and Eisen (1962) and Dillard and Landsman (1968) used it to evaluate children's behavior, and the process turned into projective uses. However, drawings that started with Freud focused on identifying the personal and emotional aspects of the personality (Burkitt, 2000; Koppitz, 1968, 1984; Machover, 1949; Péter-Szarka & Pethő, 2010). Influenced by the psychoanalytic approach, Machover (1949) included drawings of people; it focused on structural factors such as the quality of the line, size, size, placement, and content (symbolic meaning).

In the 1940s, it was widely accepted that drawings were informative about the emotional state and revealed personality traits. The concept of 'projective drawing,' which was expressed as a projective diagnosis technique in which drawings were analyzed, emerged (Péter-Szarka & Pethő, 2010)—in addition to drawings of people, Buck (1949) contributed to the field by adding drawings of houses and trees. Koppitz (1966, 1968, 1984) developed the most widely used method to evaluate HFDs to identify emotional indicators that appear more frequently in the drawings of children with emotional problems than in 'normal' children. Koppitz's (1966, 1968, 1984) studies guided drawing as an evaluation tool.

While studies on the analysis of children's drawings increased, Leibowitz (1999) emphasized that some researchers did not support the validity and reliability of these measurement tools. However, Koppitz 1968, 1984 and Naglieri et al. 1988, 1991 stated that it can be used to reveal children's emotional state by providing experimental validity. The results of the studies on children's drawings show that children convey their emotional states in an abstract way (Jolley et al. 2004; Winston et al. 1995), children use sizes and colors abstractly (Burkitt et al. 2003a, 2003b, Burkitt et al. 2004). It has been revealed that children living in immigrant and war environments effectively reveal violence and traumas through drawing (Clacherty, 2005).

Similarly, in recent years, drawing has been used as a tool to determine not only children's but also adults' perceptions, feelings, thoughts, subconscious anxiety and fears, and depression levels in stress and traumatic situations (Besser et al., 2012; Boydell et al., 2012; Broadbent et al., 2018; Broadbent et al., 2009; Camic PM., 2008; Chen et al., 2015; Cheung et al., 2016; Daleboudt et al., 2011; Fraser & al Sayah, 2011; Horne et al., 1999; Tiemensma et al., 2012 , 2015; Yama, 1990)

There are three main points underlying the use of children's drawings as an assessment tool: Children's inability to express their feelings and thoughts in some situations (Broadbent et al. 2018; Di Leo, 2015; Malchiodi, 2005), reluctance to talk about their emotional states, insufficient vocabulary. Piaget (1971, 1973) stated that children have more difficulty in verbally expressing their thoughts, especially about abstract concepts and actions. It has been stated that it can be transferred with projective techniques, which are reliable and valid methods to measure emotional state (Cherney et al., 2006; Pianta et al., 1999).

Saywitz an Nathanson (1993) used drawing as a way of obtaining information when interviewing children's experiences of negative situations is essential, but considering the limitations of the interview. Most of the time, children convey their views on their drawings while drawing and after drawing (Butler et al., 1993; Garbarino et al., 1992; Gross & Hayne, 1998; Sattler, 1998; Saywitz & Nathanson, 1993; Wesson & Salmon, 2001). It was revealed that when children drew with their narratives about the events they experienced, they were more descriptive, their expressions were more descriptive than those who did not draw, and they included more objects.

It will play a vital role for novice and experienced researchers, which can be used alone or in combination with other methods (Michel et al., 2011). Boydell, Gladstone, Volpe, Allemang, and Stasiulis (2012) analyzed the studies on the use of drawing in health research and stated that the data collected by different methods allows for comparative analysis and that more information can be obtained when face-to-face interviews support the data obtained from the drawings. Supporting the findings obtained with the drawing through interviews provides revealing the meaning embedded in the drawings (Backett-Milburn & McKie, 1999; Boydell et al., 2012; Guillemin, 2004; MacGregor et al., 1998; Mair & Kierans, 2007; Michel et al., 2011; Wesson & Salmon, 2001). Therefore, this study collected children's experiences through drawing and interviews.

METHOD

Research Design

The phenomenological approach, one of the qualitative research methods, was used to reveal how children describe their experiences of Covid and the quarantine process. Phenomenology is a qualitative research method that enables people to express their understanding, feelings, perspectives, and perceptions about a specific phenomenon or concept and is used to reveal how they experience this phenomenon and the meanings they attribute to these experiences (Creswell, 2007; Rose, Beeby & Parker, 1995; Yıldırım & Şimşek, 2018). The purpose of descriptive phenomenology is to describe people's perceptions and experiences (Husserl, 1970). Document analysis was also used since children's drawings were also examined.

Study Group

The study sample consisted of children aged 5-6 years who were educated in preschool education institutions in Gaziantep, located in southeast Turkey. In the research, an easily accessible sampling method was used because many schools were closed during the Covid period, and most of the children did not attend school or continued intermittently. An easily accessible sample saves labor, money, and time (Ekiz, 2015). 55% of the children participating in the study were girls, and 45% were boys. The average age of children is 5 years and 4 months. 80% live in the city center, 14% live in the district, and 6% live in the village. 20% of children have low socioeconomic status, 65% have medium, and 15% have high socioeconomic status.

Research Instruments and Processes

There are gathered under four types of information: observations (unattended/participated observation), interviews (closed-open-ended), documents (private- official documents), and audio-visual materials (photographs, emails, video recordings) (Creswell, 2008). In phenomenological studies, data generation is generally done using in-depth and multiple interviews. It is essential to obtain deep knowledge, especially when investigating the personal solid experiences of the participant (Giorgi, 1997; Lester, 1999). In working with children, they can verbally explain their experiences, as the literature emphasizes. They can explain the situations they have difficulty expressing verbally with drawings more clearly and in detail. For this reason, to enable children to express their experiences in detail, the technique of drawing and what they told during the drawing process was used together.

Drawing

Some researchers emphasize that the validity and reliability of the data obtained through drawing and the projective measurement tools for drawing are limited (Harris, 1963; Kahill, 1984; Swensen 1957, 1968). However, some studies have shown that children (Ives 1984; Jolley et al. 2004; Winston et al., 1995) and adults (Boydell et al., 2012; Broadbent et al., 2018; Camic PM. 2008; Cheung et al., 2016; Kot et al., 1994, Yama 1990) revealed that they conveyed their experiences. Thought to be effective.

In order to evaluate the drawings of the children, indicators related to the content and style of the drawings were determined and coded by the researchers accordingly. Content indicator for illustrations of what Covid is; 1) What is Covid, 2) How Covid affects itself, 3) Effects of Covid, 4) Feelings about Covid, 5) Indications for protection from Covid. The content indicators in the drawings related to the quarantine process are; 1) Relationships during the quarantine process, 2) What is done during the quarantine process, 3) Emotions during the quarantine process, 4) Indicators related to protection during the quarantine process. 7 indicators related to the style used in the drawing were determined: 1) size, 2) color, 3) location, 4) use of space, 5) objects, 6) lines, and 7) human figure.

Meeting

1. What is Covid, and what does it mean to you?
2. What is the quarantine process, and can you tell us what you went through during this process?

Period

Despite the closure of schools in other education levels, apart from the officially implemented closures during the Covid process, preschool education institutions were not closed, and very few children continued to school. This study collected data following a prolonged shutdown from March 2020 to March 2021. The classroom teachers made the interviews and drawings, considering that it is risky to hire someone from outside, and the children experience intense anxiety and fear in this process. The teachers and researchers who volunteered to participate in the study had an online interview and were informed about how to collect the data. The purpose of the study was explained to the teachers, and the children were trained on how to communicate before, during, and after drawing, give instructions, conduct interviews, and what kind of questions to ask. The children's names were coded in the drawings collected by the teachers. The drawings of

the children regarding their experiences with Covid and the quarantine process and the interview notes made after the drawing and in the middle were combined. Consent forms were obtained from the children's families stating that they voluntarily participated in the study.

To reveal the children's perceptions of Covid, the teachers gave the children a drawing paper and 8 colored crayons. Children made their drawings individually."What comes to mind when we say Covid? What do you think is Covid"? Can you draw a picture for me? He gave instructions. The next day, a drawing was made about the quarantine process, and the teacher asked the children, " What is quarantine? what did you do during the quarantine? How did you feel? What were your feelings at that time? Can you draw me a picture of what you were doing in those days?" gave the instruction. In both drawing processes, the teacher noted the children's narratives about what they drew while drawing and after drawing. Each drawing was coded separately by giving a number to the children. The drawings were made in the classroom according to the instructions given by the class teachers, and the teachers went to each child and asked the child the questions given by the researchers about their drawing.

After the drawing process, the teacher interviewed the drawing children in a suitable place within 3 days. Since audio recordings were not allowed, the teacher noted what the children conveyed in the interviews. The teachers' notes were transferred to the computer by the researchers, and their validity was ensured by being reread to the teachers.

Data Analysis

The general stages of phenomenological data analysis are as follows; preparation of data (bracketing/bracketing), phenomenological reduction of data (stepwise and phenomenological reduction/reduction), creative variation (imaginary variation) and revealing the essence of the experience (synthesis of meaning and essences) (Groenewald, 2004, pp. 49-50; Kleiman, 2004, pp. 11-15; Yuksel & Yildirim, 2015, p. 10). In addition, in the analysis of data in phenomenological studies, textural explanations of what participants experienced and structural explanations of how they experienced were created (Moustakas, 1994).

Many researchers state that when interpreting children's drawings, the drawing development process should be well known and their developmental characteristics should be examined (Chandler & Johnson, 1991; Di Leo, 2013; Koppitz, 1968; Metin, 2014; Picard, D. & Gauthier, C., 2012). Koppitz (1968) scores the indicators in children's drawings as "developmental criteria" that determine age and maturity level and "emotional indicators" that define children's attitudes and concerns. Koppitz (1968) emphasized that "Interpreting children's emotions should not be related to age, development and maturation". Therefore, a developmental assessment should be made first in order to interpret the perception and emotional indicators in children's drawings independently of development and maturation.

Therefore, the Drawing Development Assessment Form created by Metin (2014) was used for the developmental assessment of children's drawings. CGDF was created to analyze children's drawings developmentally. The form was developed by taking into account the developmental stages of Lowenfeld and Brittain (1987), so that each developmental stage was evaluated separately. The pre-schematic form (4-6) was used in this study. The form consists of 19 items, including indicators related to the developmental characteristics of the drawing, Drawing Features (4), Space Features (8), Human Drawing Features (6) and Color Features (11). It was revised by Aral and Metin (2020). Each item in the form is scored as yes (2), no (0) or partially (1). Children's drawings are individually; It is determined whether each feature is present in the drawing and marked on the form. It scores between -38. A high score is interpreted as the drawing development feature of the children belonging to the pre-schematic period (Metin, 2014; Metin and Aral, 2012; 2020).

Children's drawings were analyzed and grouped developmentally. Drawings from 126 children were examined and 26 drawings were excluded because they were not suitable for the study and did not meet the

specified indicators. Children's drawings and narrative notes regarding the Covid and quarantine process were analyzed by two researchers and a psychologist working in the field of children's drawings, taking into account indicators related to content and style, and codes were created. Then, the researchers came together and conducted interviews on the codes, and themes and subthemes were reached from the codes. The three researchers and the children's interviews were read one by one, and codes were created. Then, the three researchers agreed on the codes and themes and subthemes were created from the codes.

FINDINGS

The research findings were evaluated regarding how the COVID and quarantine process was experienced. The themes and sub-themes obtained from the two data sets were combined because the themes and sub-themes related to the drawing and interviews were very similar. The analysis of emotional expressions showed that more information was obtained from the drawings than from the interviews.

Themes of Drawings

Related to the Covid and quarantine process was reached from the drawings and the narratives of the children's drawings, and the concepts related to these sub-themes were obtained (Table 1).

COVID

From the drawings and the narratives of the children's drawings, the experiences related to Covid, the experiences related to the sub-themes, and the concepts related to these sub-themes were obtained (Table 1).

Table 1. *Themes and sub-themes from experience with COVID*

A. Experiences with COVID	A.1 Detection of COVID	A.1.1 Strong (14) A.1.2 Dangerous (28) A.1.3 Impact on Human (58) A.1.4 Impact on Life (21)
	A.2 Effects of COVID	A.2.1 Spreads (35) A.2.2 Contagious (6) A.2.3 It Makes Sick (24)
	A.3 Protection from COVID	A.3.1 Shutdown (63) A.3.2 Mask (54) A.3.3 Distance (2) A.3.4 Cleaning (23)
B. Self-related experiences	B.1 Self-Perception Style	B.1.1 Strong B.1.2 Weak B.1.3 Insufficient B.1.4 Loneliness B.1.5 Anxiety B.1.6 Happy\Unhappy
	B.2 Emotions	B.2.1 Anxiety (42) B.2.2 Anger (3) B.2.3 Fear (17)

A. Experiences with Covid:

A.1. Perception of COVID in children's drawings; It has been determined that they see them as strong, bad, dangerous and harmful. As seen in the drawings, the children tried to show Covid as significant by including the whole page (Figure 1,2,3,4).

Figure A.1.1 *Strong*

Figure A.1.2 *Dangerous*

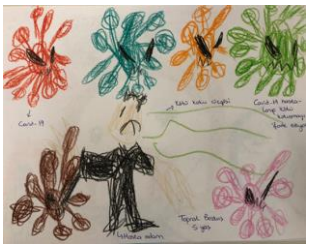


Figure A.1.3 *Impact on Human*

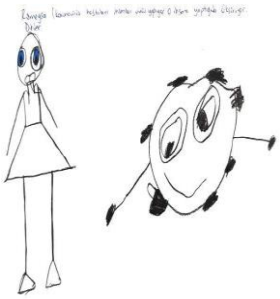


Figure A.1.4 *Impact on Life*

The children expressed this situation in their drawings as follows:

A52: "*Viruses overgrow and are dangerous."*

A60: "*This coronavirus is a virus. Purple virus, blue virus. These are also tiny viruses. All are* dangerous."

A 66: *"They are descending from the air to attack people. They hurt people; they kill them. There are other coronas behind them. People are dying. They wear masks so they don't die. The coronaviruses don't see them."*

A.2. Children stated in their drawings about the Effect of COVID that COVID makes them sick, is contagious, and spreads. As can be seen in the drawings of the children (Figure A.2.2), among the small, unhappy people, many viruses and the children expressed themselves by drawing on the margin of the page and the viruses on the whole paper.

Figure A.2.1 *Spreads*

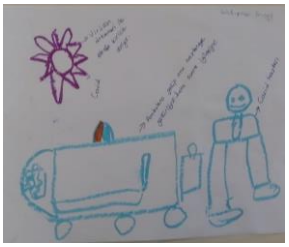


Figure A.2.2 *Contagious*

Figure A.2.3. *Makes Sick*

The children expressed this situation in their drawings as follows:

C72: *"COVID 19 means coughing to be sick."*

A23: *"We always get sick because of the coronavirus. We have to wear masks."*

A5: "*He was sick, he died with the virus."*

A66: *"They are descending from the air to attack people. They hurt people, they kill them. There are* other *coronas behind them..."*

A.3. Children's drawings about protection from COVID indicated closure, mask, distance and cleaning, and the children expressed this situation as follows:

Figure A.3.1 *Closure*

Figure A.3.2 *Mask*

Figure A.3.3 *Distance*

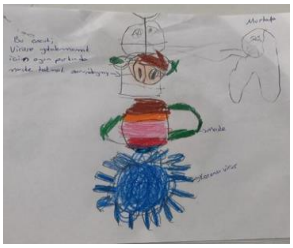


Figure A.3.4. *Cleaning*

The children expressed this situation in their drawings as follows:

A17: *" I know how the corona spread. People need to be together in crowded environments."*

A23: *" We always get sick because of the coronavirus. We have to wear masks."*

B. Himself

Themes were reached from the drawings related to the way she perceived herself. These are Self-Perception and Emotions sub-themes.

B.1. In the theme of self-perception , children drew themselves as weak, weak and inadequate in their drawings and expressed this situation as follows:

Figure B.1.1 *Strong*

Figure B.1.2 *Weak*

Figure B.1.3 *Insufficient*

Figure B.1.4 *Loneliness*

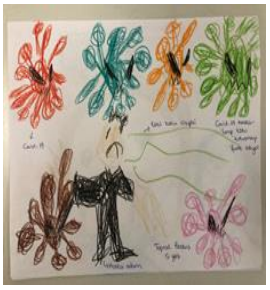


Figure B.1.5 *Anxiety*

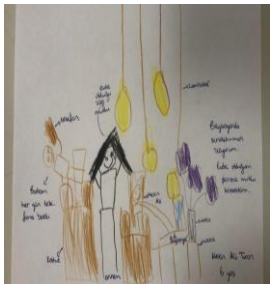


Figure B.1.6 *Happy/Unhappy*

The children expressed this situation in their drawings as follows:

C99: *"The virus has come home. I'm afraid of corona."*

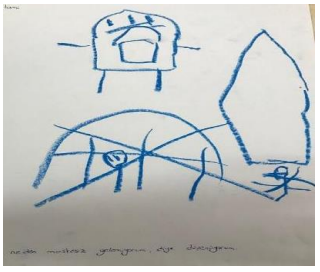
A77: *"Covid 19 expresses our sadness with my mother. It makes us sad."*

B.2. When the theme of emotions was examined, the children drew their feelings of anxiety, fear, anger and loneliness, uneasiness, happiness and unhappiness in their drawings, and they expressed this situation as follows:

Figure B.2.1 *Anxiety*

Figure B.2.2 *Anger*

Figure B.2.3 *Fear*



C9: *"The mask is being worn because of the Corona. Take the mask and get out of here. Get out of this country, coronavirus."*

A71: *"I'm afraid of the coronavirus, but since nothing happened to my father, I thought it wasn't so scary. "*

C99: *"The virus has come home. I'm afraid of corona."*

Quarantine Process

Findings of the quarantine process, relationships, and feelings sub-themes were reached from the children's drawings. The findings regarding the theme and sub-themes are presented in Table 2.

Table 2 *Quarantine Experiences related to the process*

Quarantine Process	A. Perception of the House	positive perception		
		negative perception		
	B. Perception of Relationships	B.1 Passing Time	B.1.1 Self-spent time	B.1.1.1 Technology (24)
				B.1.1.2 Academic Activity (16)
				B.1.1.3 Play Toy (11)
			B.1.2 Time spent with others	B.1.2.1 Activity in the home (60)
		B.2 Relationships	B.2.1 Father-Mother (67)	
			B.2.2 Sibling (67)	
			B.2.3 Need for Socialization (77)	
	D. Perception of Emotions	C.1 Positive Emotions	C.1.1 Happiness (84)	
		C.2 Negative Emotions	C.2.1 Anxiety (42)	
			C.2.2 Fear (17)	
			C.2.3 Anxiety (20)	
			C.2.4 Loneliness (24)	
			C.2.5 Unhappiness (47)	
	C. Protection		B.3.1 Shutdown (79)	
			B.3.2 Mask (68)	
			B.3.3 Distance (33)	
			B.3.4 Cleaning (56)	

A. In the sub-theme of the house's perception, the children expressed their negativity because of staying at home by deforming the houses they live in their drawings. They expressed this situation in their drawings as follows.

Figure A.1 Deformed House

B. Relations sub-theme; spending time, relationships, and protection sub-themes were reached.

B.1. Opinions about spending time with oneself and others were obtained from the sub-theme Spending Time. It has been concluded that the child who spends time with himself usually does technology, games/toys, and academic studies. The children generally stated that they frequently use tools such as TV, tablet computer. However, they stated that they were very bored with this process. Technological devices, typically among children's interests, were boring for them during the quarantine process. This situation is expressed in his drawings and interviews about his drawings.

B.1.1 With Himself

Figure B1.1.1 *Technology*

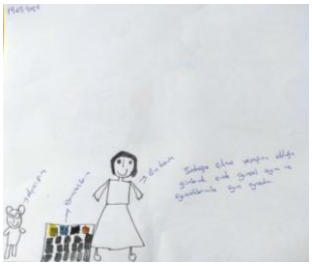


Figure B.1.1.2 *Academic Study*

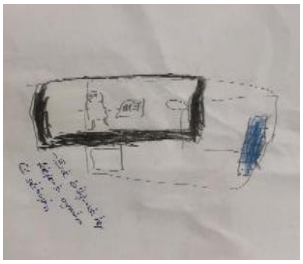


Figure B.1.1.3 *Toy/game*

Figure B.1.2.1 *Other activities in the home*

B.1.2 With others

T26: *"I always watched TV when I didn't go out. It was horrible not to go out."*

T51: *"I did a book study. I played chess with my sister. When we stayed home, I felt happy because I spent much time with my family."*

T52: *"I played coronavirus by myself at home. I was pleased to be home. I had a lot of fun with my family."*

B.2. In the drawings related to the sub-theme of relations. The concepts of parental relationship, sibling relationship, relationships with others, and the need for socialization were reached.

B.2.1. In the sub-theme of the Mother-Father Relationship, in the parent-child relationship, some children drew the mother huge and in detail and drew themselves on the far side. In this case, in some drawings where the relationship between them is not very positive, it is seen that the mother-child relationship is positive.

Figure B.2.1. *Parent Relationship*

C9: *"I'm so sad, I'm bored. I am watching TV. I'm helping my mother."*

A48: *"I was shocked because I couldn't go out. I played games with my father and mother."*

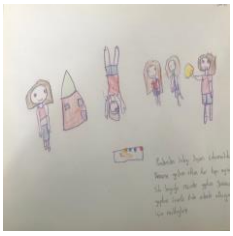
B.2.2. It was determined that the children's sibling relations were positive, and they did activities such as playing together. This situation is expressed in his drawings and interviews about his drawings.

Figure B.2.2. *Sibling Relationship*

A67: *"We had lessons with my brothers. We looked at the TV. We played hide and seek outside, our house has a garden."*

B.2.3. In the concept of socialization need, children expressed their need and longing for socialization by expressing that they could not meet with other family members and acquaintances and that they were unhappy with this situation. This situation is expressed as follows in his drawings and interviews about his drawings.

Figure B.2.3. *The Need for Socialization*



T70: *"The weather was beautiful when it was forbidden to go out. But we couldn't go out because of the virus flying in the air. We couldn't go out; it's forbidden. And the incoming police vehicle will take away the viruses."*

T18: *"When I stayed home, I played games on the tablet. I was always bored because I didn't go out."*

B. 3. The concepts of closure, mask, distance, and cleaning were reached from the sub-theme of protection.

B.3.1. Closing: he drew himself outside his home in children's drawing. In the interviews about the drawing, he expressed his unhappiness because he wanted to be outside and could not go out. The child expressed feeling trapped in the house he lived in during the quarantine period by drawing the house trim and showing himself at the door, with a corona in a large paper area.

Figure B.3.1. *Closing*

T22: *"I couldn't attend school; I was distraught. I always stayed at home. I couldn't go to buy cotton candy."*

T43: *"I didn't like coronavirus because I stayed home. I wanted the right to go out. I wanted to hop and jump."*

B.3.2. In the mask concept, children emphasized that they should wear masks to protect themselves

from the virus in their drawings and interviews. They expressed this situation as follows.

Figure B.3.2. *Mask*

A 45: *"When we come from outside, we have a virus that goes away when we wash it. We should keep a distance of 5 meters between us against the virus. We should wear masks in shopping malls."*

B.3.3. In the concept of distance, the children showed that they were aware of the need to keep a distance in their drawings and the interviews about their drawings. They expressed this situation as follows.

Figure B.3.3. *Distance*

T36: *"Do not go out, the coronavirus has spread everywhere."*

B.3.4. Regarding the concept of cleaning, the children showed that they were aware of the need to keep a distance in their drawings and the interviews about their drawings. They expressed this situation as follows.

Figure B.3.4. *Cleaning*

T29: *"Microbes have produced offspring. We use masks so that the puppies do not come to us."*

C. Positive and negative emotions were reached from the emotion sub-theme.

C.1. In the concept of positive emotions, the children stated that they were happy to be at home during the quarantine period and spend time with their families, which created joy for them.

Figure C.1. *Happy*

T1: *"I stayed at home because of the ban. I did watercolor. I was happy; I looked at the TV. I played Lego. I helped prepare breakfast with my mother. It was a beautiful process."*

S76: *"I watched cartoons on the computer. As long as I was home, I was happy."*

C.2 In the concept of negative emotions, they stated that quarantine causes anxiety, fear, uneasiness, loneliness, and unhappiness in children.

Figure C.2.1. *Fear*

Figure C.2.2. *Anxiety*

Figure C.2.3. *Happy*

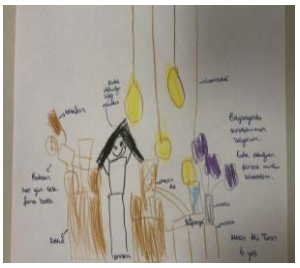


Figure C.2.4. *Unhappy*

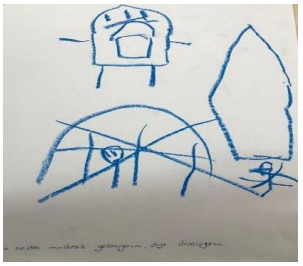


Figure C.5. *Anxious*

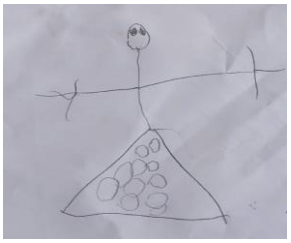
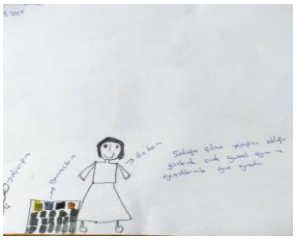


Figure C.6. *Loneliness*



T73: *"Everyone had a job. I was trying to do something myself. I felt sad."*

S79: *"I jump from my bed to my mother's bed. I always felt sad at home."*

T77: *"I watched the coronavirus news with my grandmother. I was surprised."*

DISCUSSION, CONCLUSION, RECOMMENDATIONS

In the study conducted to reveal the experiences of young children regarding the Covid and quarantine process, separate drawings were made regarding the Covid and quarantine process, and each child was interviewed about the process. It was seen that the children's drawings and views on Covid were similar, and common themes and sub-themes were created. From the drawings and interviews about Covid, two themes were reached, including experiences related to Covid and experiences related to self. It is seen that children define Covid as something that is strong, bad, spreading, damaging, and sickening. They have conveyed the situation they have personally experienced as a mask, distance, closure, and cleaning to protect themselves from Covid. While the children shared their experiences about what Covid is, they also revealed themselves with Covid and shared their own experiences. Few of the children expressed themselves firmly in the face of Covid, both in their drawings and interviews. However, although many children stated they were afraid in the

interviews when the drawings were examined, they included feelings they could not express (weakness, inadequacy, loneliness, uneasiness, anger, anxiety, unhappiness). As can be seen in the drawings, despite Covid, which is drawn large and covers the entire surface of the paper, they are small, deformation in body parts or faces, unhappy expressions, and emotions such as anxiety, anger, and uneasiness have emerged in his drawings.

From the second research question about how children experience the quarantine process, the themes of home perception, family relations, emotions, and protection were reached. The children attributed remarkable features to the house while conveying the quarantine process. Home is a concept that has an essential place in the lives of all individuals and includes many psychological meanings beyond being a physical object. It is seen that some children deform the house, have negative feelings about the house in terms of color, line use, and size, and draw themselves outside of this house drawing. During the quarantine process, it is seen that they identify the negative feelings of being closed from the house. Most children, on the other hand, are seen to convey the house drawings more warmly in parallel with the positive emotions they experience.

In their experiences of the quarantine process, the children emphasized domestic relations to a great extent. They reported that they spent time at home (using technological devices such as TV, tablet phone, academic activities, and playing games) and participating in domestic routines and activities with their other family members, parents, and siblings. They did activities such as cooking and doing housework as domestic activities. Many children, both in their drawings and verbally, have conveyed the positive effects of this process for them. In contemporary societies, the work of parents and increasing responsibilities have limited their domestic processes with their children. The pandemic shows that children have more opportunities to live indoor activities with family members. Uzun, Karaca, and Metin (2020) reported in their study that domestic work and responsibilities increased during the Covid process and that non-working parents positively affected family relations, as in the studies conducted before Covid.

Similarly, they showed that support between spouses and their relations with their children are more favorable (McArthur, Racine, McDonald, Tough, & Madigan, 2021; Uzun, Karaca, & Metin, 2020). He states that the well-being of children and parents also affects children. A study conducted in China showed that parents spend more time with their children, which leads to positive family relationships (Liu et al., 2020). Studies on Covid show changes in children's sleep routines, screen time levels, physical activity, and participation in recreational activities (López-Gil et al., 2021; Moore et al., 2020). López-Gil, Tremblay, and Brazo-Sayavera (2021), in their study with children aged 3-17, stated that children's sleep patterns changed and their daily activities decreased.

Considering the children's experiences regarding domestic relations, although they stated they were bored and wanted to go out and play with their friends, they were happy to spend time with their family members at home. They conveyed their positive experiences at home, regardless of their parents. However, the fact that the mother is mainly found in the drawings shows that the mothers are interested in the children during quarantine. In their study, Uzun, Karaca, and Metin (2020) also revealed that mothers are more interested in their children during the Covid process. However, fathers who support their spouses are essential for positive family relationships. There are also studies showing that feelings of fear, anxiety, and uncertainty increase the burden on families' shoulders, but efforts to overcome these negative emotions with their children strengthen their relationships and harmony (Fegert et al., 2020; Kılıç et al., 2011; Masten & Narayan, 2012). This situation may be related to parent-child closeness, perceptions of mental health, and reactions to the process (Russell et al., 2020).

Loades et al. (2020) on the other hand, families are in the middle of living together during the quarantine period. They stated that it was challenging. However, it has been concluded in studies that negative processes affect family relationships negatively (Giannotti et al., 2022; Fontanesi et al., 2020; Lades et al., 2020; Lee & Ward, 2020). Feinberg et al. (2021) also found that public health interventions in the Covid 19 process adversely affected family relationships. There is also research on the increase in stress and deterioration in the parent-child relationship (Brown et al., 2020; Cameron et al., 2020; Spinelli et al., 2020; Yeasmin et al., 2020).

They conveyed many positive and negative emotions in their experiences of children's emotions regarding the quarantine process. Many children (84) stated that they were happy in this process. However,

they expressed fear as a negative emotion, and it was revealed that they also experienced emotions such as anxiety, uneasiness, loneliness, and unhappiness in their drawings. Many studies have been conducted on children's emotions during the Covid process. However, it is seen that studies on preschool children are limited in these studies. Loades et al. (2020) children and adolescents, from their peers, teachers, stated that they experienced a prolonged state of physical isolation from their extended families and community networks. In the studies, Choobdari et al. (2020) reviewed 15 studies and mostly showed increased behavior problems, problems related to self-regulation, anxiety and fear in older children, adjustment, and fear. Problems related to coping strategies, experience of abuse and emotional abuse, increased severity of mental disorders and depression, and post-traumatic stress disorder. Loades et al. (2020) examined 63 studies on isolation and stated that only 5 studies were related to preschool children. It was revealed that children from these studies conveyed their feelings of loneliness and that social isolation had a negative effect (Chawla et al., 2021). Biceps research has also shown that social media, television, and smartphone use is increasing among children, which is often associated with the severity of anxiety. The association of increased stress or emotional distress symptoms with decreased physical activity revealed a common finding. However, it is seen that these studies are mainly aimed at older children. (Lavigne-Cerván et al., 2021). A study conducted with children aged 6-18 shows they experience anxiety, sleep, and executive function problems. The study observed that although the children conveyed their positive experiences, they experienced negative emotions. Morgül, Kallitsoglou and Essau (2020) studied children aged 5-11 in England. The findings of their study are similar to the findings of this study. Morgül et al. (2020) the most frequently reported child symptom was boredom (73.8%), followed by loneliness (64.5%) and frustration (61.4%). Irritability, restlessness, anger, worry, sadness, and the possibility of arguing with the rest of the family were reported by more than 30% of caregivers.

A study on children's emotions during the Covid 19 period revealed that social isolation and anxiety lead to negative behaviors (O'Sullivan et al., 2021). Studies show that children staying at home and studying remotely from the beginning of the pandemic lead to feelings of sadness, depression, and loneliness (Lee et al., 2020). Loades et al. (2020) worked with children under 10 in their systematic review study. They concluded that depressive symptoms were more common in children during this period. The fact that the data in the studies were mainly based on the parents' opinions and that the children included the adolescence period can be expressed as the reason for the negative emotions experienced during the quarantine process. Preschool children in Turkey spend their time at home with their family members until they start school due to the risks of going out in recent years. In addition, it can be seen that preschool children in the concrete operational period have fewer negative emotions due to their inability to fully interpret concepts such as Covid, illness, and death. For this reason, it can be said that despite the harmful effects of the closure on them, it can be said that their perceptions of the time they spend with the family during the quarantine process are also effective.

They especially expressed their emotional state in children's experiences regarding Covid and the quarantine process. As discussed above, while the children expressed fear, which is the fundamental emotion, in the interviews, emotions such as anxiety, loneliness, and uneasiness, which are deeper in their drawings and which are more difficult to express for children in terms of development, emerged in the analysis of their drawings. This fact supports the views of many researchers working on children's drawings for years. Children's drawings can be seen as an essential tool in revealing the emotions they live and experience for reasons such as limited verbal expression in children (Malchiodi, 2005).

In the study, which was carried out to reveal children's experiences regarding the Covid and quarantine process during the Covid process, children's drawings and opinions were consulted. As stated in the literature, the interventions need to reveal the situations children experience regarding their adverse situations. Broadbent et al. (2018) noted that these negative experiences are often based on adult views or Fivush and Hudson (1990); It can be abbreviated or coded as Salmon et al. 1993 noted. For this reason (Brooks, 2009; Coates & Coates, 2006; Klepsch & Logie, 1982; Koppitz, 1966; Leibowitz, 1999; Matthews, 2003; Papandreou, 2014; Pinto et al., 2011; Wesson & Salmon, 2001). Provides more descriptive information than interviews Michel et al. (2011), Boydell, Gladstone, Volpe, Allemang, and Stasiulis (2012) analyzed the studies on the use of drawing in health research and stated that the data collected by different methods allows for comparative analysis and that more information can be obtained when face-to-face interviews support the data obtained from the

drawings. Saywitz and Nathanson (1993) stated that it is essential to interview children about their experiences of adverse situations, but considering the limitations of the interview, drawing information. Supporting the findings obtained with the drawing through interviews provides revealing the meaning embedded in the drawings (Backett-Milburn & McKie, 1999; Boydell et al., 2011; Guillemin, 2004; MacGregor et al., 1998; Mair & Kierans, 2007; Michel et al., 2011; Wesson & Salmon, 2001).

As stated in the literature, the drawings also support the view that children express their experiences about their experiences symbolically. Similar results are available in studies conducted by Fegert, Vitiello, Plener, and Clemens (2020). Drawings are the best way for children to express the events they experience. Children's drawings are also defined as their sociocultural semiotics (Papandreou 2014). In addition, children's drawings are known as evidence of how they perceive their environment in the events they experience. In their research, Picard, Brechet, and Baldy (2007) concluded that children's drawings reflect their moods. Studies show that children who are heavily affected by the events they experience have increased anxiety compared to other children (Wennström et al., 2011; Wisner et al., 2018). Therefore, in this study, it was observed that children conveyed their emotional experiences in more detail through drawing.

LIMITATIONS and IMPLICATIONS

Although this study is essential in directly revealing children's experiences regarding the Covid process through their views and drawings, it also includes some limitations. The most important limitation was seen in the creation of the sample. After a lengthy quarantine period, schools were opened, and very few children attended school. Therefore, there was not much variation in the sample. In the data collection process, foreigners, including researchers, were not admitted to the schools other than the teachers, and the teachers collected the data. Because the teachers were very busy with the stress and anxiety they experienced, they were informed online about the data collection process, and there was not much contact with the teachers about the data collection process. Even though the teachers conducted the interviews with the children separately, these interviews were held in the classroom environment, and due to the lack of recording, notes were taken quickly about the interviews and drawings of the children, and it was seen that not much detail was entered in these notes.

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Author Contribution Rates:

Şermin Metin: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft, Writing - review & editing. %50

Mihriban Özcan: Conceptualization, Formal analysis, writing-original draft, Investigation, Writing - original draft, Writing - review & editing. %30

Büşra Bilir Çevik: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft. %20

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Teaching Braille to Sighted Individuals through Technology: A Systematic Review[1]

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ABSTRACT

This study examined the studies on teaching braille to sighted individuals through technology. This systematic review study conducted research on Web of Science, ERIC, Academic Search Ultimate, Google Scholar, and Scopus. As a result of the search, 10 studies related to the subject were ultimately included. The researchers analyzed these studies through descriptive analysis. As a result of the research, it was determined that the studies examined were mainly conducted to introduce software or provide information/examine existing software or resources and evaluate the effect of a computer-based program. In addition, the researchers revealed that mostly single-subject design studies were conducted. Almost all the participants in the studies were undergraduate students. In all these studies, researchers collected data by recording within the software, braille, and printed reading passages and analyzed them primarily through graphical analysis. Moreover, it was revealed that there were more studies in which information about the software and the revisions made according to the test of the software were presented as qualitative findings. Finally, the studies reviewed were obtained through specific databases, specific keywords and word combinations. These studies were analyzed in the context of certain variables. In addition, it is limited to 10 studies published in a peer-reviewed journal, whose full text can be downloaded, whose target audience is sighted individuals, and which address technologies/software/hardware related to braille education.

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INTRODUCTION

For vision to occur, the eye, optic nerve, and brain must work together. A disorder/disruption in one of these can cause visual impairment. The causes of visual impairment are generally addressed before, during, and after birth (Aslan & Işıtan-Kılıç, 2023). At this point, it is possible to define visual impairment as partial or complete loss of vision that occurs before, during, and after birth (Ministry of National Education [MoNE], 2018). It is known that individuals with visual impairment may be delayed in many developmental areas, such as motor skills, cognitive development, etc., due to these deficiencies and may lag their sighted peers (Altunay et al., 2023; Gürel-Selimoğlu, 2021). However, individuals with visual impairment can catch up with their sighted peers by being supported with appropriate education (İşlek, 2020). It can be said that braille is one of the areas that should be supported for individuals with visual impairment.

Braille is a tactile writing system for individuals with visual impairments (Lee & Foo, 2010). Braille is based on symbols created by embossing six dots according to various combinations (Şafak, 2022). Braille consists of six embossed dots (3x2) in a rectangular shape with two columns and three dots in each column (Argyropoulos & Papadimitriou, 2017). The dots in the left column are numbered 1, 2, and 3, respectively, from top to bottom, and the dots in the right column are numbered 4, 5, and 6, respectively (Antonacopoulos & Bridson, 2004). These dots are used universally; thus, braille symbols such as letters, numbers, and punctuation marks in the braille writing system are formed (Koenig & Holbrook, 2000).

Since individuals with visual impairment cannot read printed writing, they do their reading-writing activities through braille. Braille is an important system that enables individuals with visual impairment to read and write and supports the development of literacy skills (Putnam, 2013). Individuals with visual impairment who can use braille effectively can independently perform many skills, such as preparing for exams, accessing information, participating in academic activities that require reading and writing, and performing daily tasks independently (Lupetina, 2022). In addition, it is stated that these individuals are more successful in various fields such as economy, employment, education level, and quality of life (Hatzigiannakoglou & Kampouraki, 2016; Ryles, 1996).

Learning braille is one of the essential elements of the education curriculum of individuals with visual impairment (Koenig & Holbrook, 1995). However, the literature states that the braille literacy rate of individuals with visual impairment is low (Dimitrova-Radojichikj, 2015). One of the reasons is the need for teachers with braille competence (Rahimi et al., 2018). Putnam and Tiger (2016) argue that no trained instructors can provide braille education in many schools. In addition, it is estimated that the braille competencies of teachers in various branches, such as mathematics, science, and social sciences, who teach individuals with visual impairment are also limited. Such a situation negatively affects the braille learning of individuals with visual impairment (Hatzigiannakoglou & Kampouraki, 2016). Therefore, it is mentioned that teachers should be familiar with braille to give quick feedback, make corrections, or adapt teaching materials to students with visual impairment during teaching (Bell, 2010). At the same time, teachers or prospective teachers need to know braille to support the academic skills of individuals with visual impairment, provide practical education, and carry out measurement and evaluation (Lee & Foo, 2010). It is even stated that beyond teachers, families with children with visual impairment also need to learn braille for some purposes, such as helping their children in their lessons and controlling what they do (Küçüközyiğit et al., 2021).

Since individuals with visual impairment cannot benefit from the sense of sight, they learn through their sense of touch (fingertips). However, the learning of braille reading by sighted individuals and individuals with visual impairment differs. Sighted individuals may not need to learn braille tactilely. In other words, sighted individuals should learn to read braille visually (Scheithauer & Tiger, 2012). However, sighted individuals may encounter some difficulties in learning braille. These difficulties

include the complex structure of braille, tactile awareness, and the limitations of practicing and receiving feedback (Aslan et al., 2024). Therefore, effective braille education systems and methods are needed for sighted individuals (Sasaki et al., 2007; Scheithauer & Tiger, 2012).

The literature emphasizes that many sighted individuals can learn braille when adequate motivation is provided and the proper methods are used (Bola et al., 2016). It is possible to exemplify these effective methods, such as presenting braille teaching with the support of technology, web-based or computer-aided braille teaching, and online braille educational software/systems. Some studies in the literature indicate that software or programs used in braille education are effective (e.g., Kapperman et al., 1996; Putnam & Tiger, 2015; Putnam & Tiger, 2016; Sasaki et al., 2007; Scheithauer & Tiger, 2012; Scheithauer et al., 2013). The use of websites or web-based programs in teaching braille to sighted individuals has many advantages, such as increasing interest in learning braille, facilitating learning, and being accessible from anywhere, in addition to improving the effectiveness of learning (Abd-Aziz et al., 2023). The ubiquitous accessibility of teaching braille to sighted individuals is a solution that can overcome the shortage of qualified instructors (Putnam & Tiger, 2015). Therefore, using computer-assisted applications and internet technologies to teach braille to sighted individuals is seen as promising (Lee & Foo, 2010). However, despite this vital situation, researchers point out that there are minimal studies on the use of technology in braille instruction (e.g., Hatzigiannakoglou & Kampouraki, 2016; Putnam & Tiger, 2015) and emphasize the need for more experimental research (Lee & Lee, 2021). The present descriptive study constitutes a review of studies on the use of technology in braille instruction. The objective of this study was twofold: firstly, to draw attention to the use of technology in braille teaching, and secondly, to present a descriptive picture for researchers working on braille. In accordance with this objective, the studies were analyzed according to the following criteria: a) purpose, b) research design, c) participants, d) data collection tool, e) data analysis, f) software/hardware, and g) findings variables.

METHOD

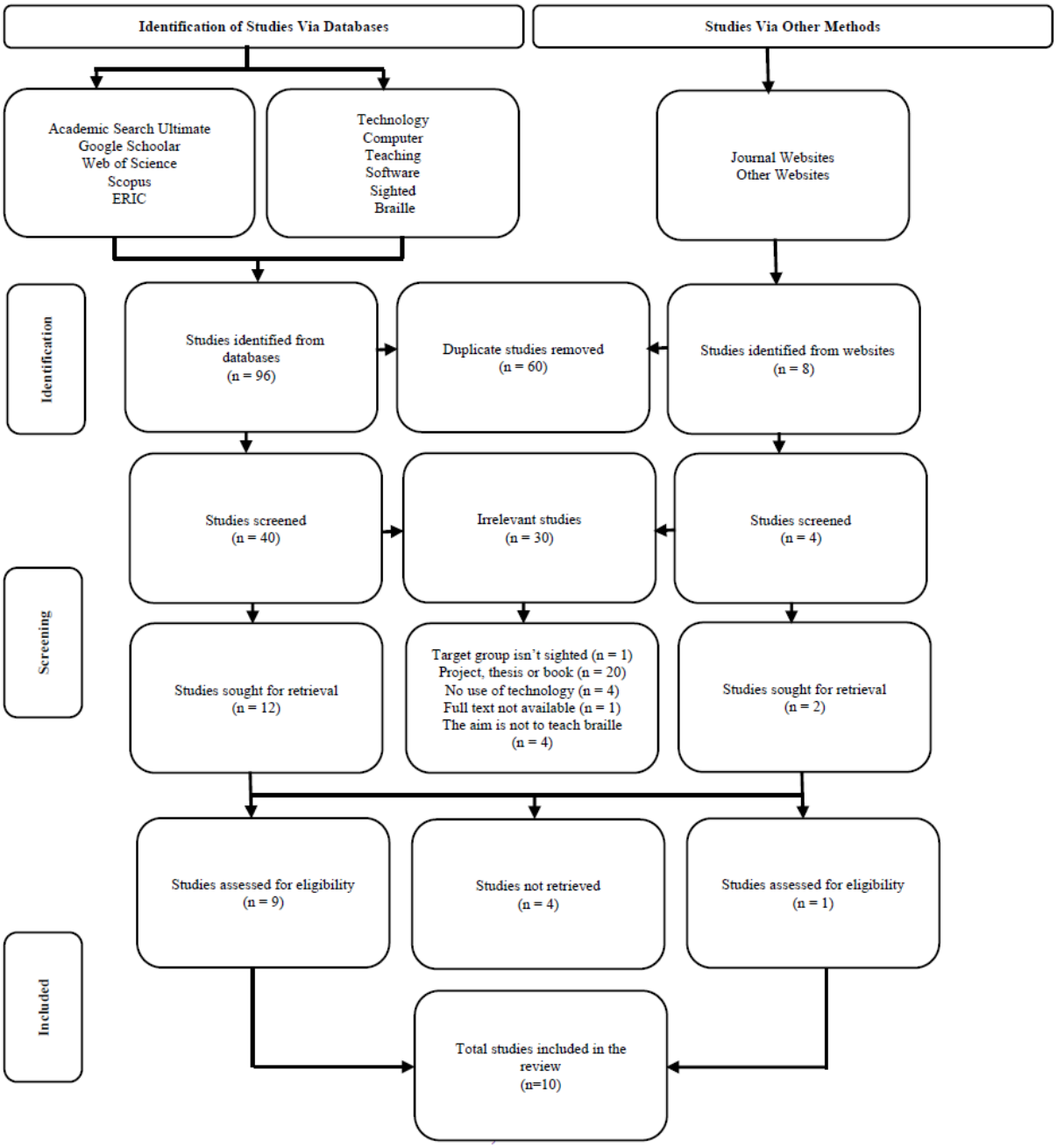
Research Design

This study is a systematic review. A systematic review examines predetermined studies according to specific criteria based on variables or research questions (Zawacki-Richter et al., 2020). Within the scope of this study, the researchers established some inclusion and exclusion criteria and examined the studies they reached in the context of various variables.

Literature Review

For the literature review in this study, the researchers followed the processes of a) identification, b) screening, and c) inclusion. They used the Web of Science, ERIC, Academic Search Ultimate, Google Scholar, and Scopus electronic databases to access relevant research for this systematic review. They searched for the keywords “braille,” “technology,” “sighted,” “computer,” “software,” and “teaching” and the word combinations “braille and technology,” “braille and sighted and technology,” “braille and computer,” “braille and software,” “braille and sighted,” “braille and teaching” and “sighted and braille and teaching.” As a result of their searches with the keywords and word combinations available in the databases mentioned above, they reached 104 studies that overlapped with the research topic. Then, they filtered the studies using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021).

Figure 1. *PRISMA flow diagram for the examined studies for systematic reviews*



The researchers set some inclusion and exclusion criteria to identify relevant studies. The inclusion criteria were that

a) The research was published in a peer-reviewed journal,

b) The full text of the research was available for download,

c) The target group of the research was sighted individuals,

d) The research addressed technologies/software/hardware related to braille instruction. (In this study, technology was considered any device, application, or platform with physical, hardware, or software features that improve individuals' braille skills or enable braille acquisition).

e) The exclusion criteria were that

1. The research did not involve technology in braille instruction (e.g., traditional tactile instruction),

2. The research was a conference paper, project report, thesis, or book chapter,

3. The full text of the research was not available,

4. The target group of the research was not sighted individuals (e.g., individuals with visual impairment), and

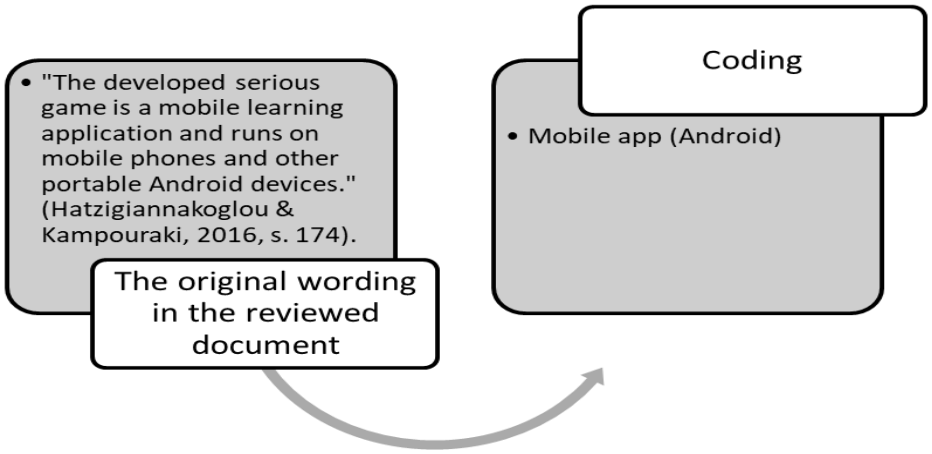
5. The purpose of research was unrelated to braille instruction (e.g., translation between braille and print).

6. The researchers compiled ten studies for detailed review based on these inclusion and exclusion criteria and the procedure they followed.

Data Collection

The researchers created a coding key to evaluate the ten studies analyzed in this study. The coding key was created through the variables described in the title of data analysis because descriptive analysis was used for data analysis. They coded the studies in the document pool using this coding key. This coding was done separately by two of the authors of the article. The sample coding for the "software/hardware" variable within the scope of the research is presented in Figure 2.

Figure 2. *An example of the coding made within the scope of the research*



Data Analysis

The researchers analyzed the studies obtained in this study through descriptive analysis. Descriptive analysis is explained as a type of analysis in which the data obtained are summarized and interpreted according to predetermined themes (Yıldırım & Şimşek, 2018). In this study, the researchers analyzed the related studies according to the variables of a) purpose, b) research design, c) participants, d) data collection tool, e) data analysis, f) software/hardware, and g) findings.

Validity and Reliability

In this research's context of reliability studies, firstly, two authors carried out electronic screening independently. As a result of these screenings, the percentage of agreement between authors was calculated as 100%. In addition, an inter-coder reliability calculation was made regarding the coding. In this calculation, the formula "Agreement / (Agreement + Disagreement) x 100" was used (Miles & Huberman, 2014). As a result of the calculation [26/(26+6) x 100] for 40% of the studies reviewed with the formula in question, an inter-coder reliability percentage of 81.25% was found. A value of 80% and above is considered sufficient (Miles & Huberman, 2014). In the context of validity studies, strategies were utilized by triangulation by involving at least two researchers in the collection, interpretation, and analysis of the data; detailed description through detailed reporting of the research process; and obtaining the opinion of an expert experienced in systematic review after the reporting of the findings was completed (Merriam, 1998).

Ethics

This research is a systematic review and therefore does not require ethical approval.

FINDINGS

Table 1. *Reviewed Studies*

Source	Purpose	Design	Participants	Data Collection	Data Analysis	Software	Findings
Kapperman et al. (1996)	Review of braille and computer-assisted braille transcription programs for sighted individuals and presentation of the description, manual, and field test results of The Computerized Braille Tutor	-	4 teachers 2 students 2 families 2 counselors	Proficiency test Correction exercises Braille translation	Qualitative and quantitative analysis	MS DOS-based software	Information about the computerized braille tutorial is included. In addition, according to the data obtained from 10 sighted people, some arrangements were made with the software.
Sasaki et al. (2007)	Detailed description of the self-learning system of Braille reading and writing and presentation of results data	-	1 student	Log records	-	Computer-based learning system	Information about the developed system is given. As a result of the three-month experiment of the system, the average time per braille character input was reduced by approximately 30-50%, which shows the effectiveness of both the reading and writing subsystems.
Lee & Foo (2010)	Designing a web-based learning system for teaching, facilitating, and supporting the learning of braille code for sighted individuals	Multidisciplinary team approach	Teachers Teacher candidates Families	Checklist Ranking test Braille translation Self-assessment	-	Web-based learning system	The web-based learning system was introduced and stated to be under development.
Scheithauer & Tiger (2012)	Preliminary evaluation of a computer-based program that aims to teach the relationship between Braille	Multiple baseline design	4 teacher candidates	Braille reading text Oral reading fluency test Letter recognition test	Graphical analysis	Computer-based learning program	Participants became adept at matching visual braille with printed words. They also increased the number of braille words they read. These were

	characters and English letters using a matching-to-sample format						maintained in the maintenance probes.
Scheithauer et al. (2013)	Comparing the effectiveness and efficiency of the program using two different response formats on a larger sample	-	81 teacher candidates	Braille reading Braille letter recognition Social validity questionnaire Demographic information form	t-Test	Computer-based learning program	Both response formats increased braille letter recognition and braille reading. In addition, similar results were obtained in the follow-up sessions. High questionnaire averages were obtained in terms of social validity.
Putnam & Tiger (2015)	Teaching braille letters, numbers, punctuation marks, symbols, and contractions to sighted individuals	Multiple probe design	4 teacher candidates	Log records Braille reading text Oral reading fluency test	Graphical analysis	Computer software (VBT)	The training was partially practical in recognizing braille characters. Also, participants' braille reading increased but did not reach fluency levels in all cases.
Putnam & Tiger (2016)	Evaluation of the effects of teaching the relationship between Braille characters and printed letters on various variables	Multiple probe design	4 teacher candidates	Braille translation Braille reading text Oral reading fluency test	Graphical analysis	Computer software (VBT)	Although the program improved some skills positively, more was needed in all modules. There was also an increase in the skills of transcribing braille sentences and braille reading fluency.
Hatzigiannakoglou & Kampouraki (2016)	Giving information about the game developed to teach the Braille alphabet	Experimental	-	Games	-	Mobile app (Android)	A new software on braille alphabet learning for sighted individuals is presented.
Lee & Lee (2021)	Examining the success indicators measured on the MOOC platform, course completion rates and perceptions of course quality	-	69 teacher candidates	Braille test Course completion rate Log records Perception scale	Descriptive	Web-based learning system (MOOC)	It was determined that at least 85.5% of the students could learn braille codes and had a positive perception; however, it was stated that the course completion rate of the students was low.
Abd Aziz et al. (2023)	Development of a Braille learning website,	Qualitative	-	Document	Document analysis	Website	There are two websites for learning Braille: eKodBrailleBM

	examining its use and function	and eBrailleHjjaiyyah .

Purpose Findings

When the reviewed studies are examined according to their purposes, it is seen that most of the studies (n=5) addressed the development/design or introduction of a system related to braille teaching (Abd Aziz et al., 2023; Lee & Foo, 2010; Sasaki et al., 2007), game development (Hatzigiannakoglou & Kampouraki, 2016), and review of existing programs (Kapperman et al., 1996). The remaining studies (n=5) focused on braille instruction and evaluated the programs' effects (Lee & Lee, 2021; Putnam & Tiger, 2015; Putnam & Tiger, 2016; Scheithauer & Tiger, 2012; Scheithauer et al., 2013).

Research Design Findings

When the related studies are evaluated in terms of the research designs, they used, it comes to the fore that single-subject designs were mainly used (n=3). Two of these studies (Putnam & Tiger, 2015; Putnam & Tiger, 2016) used a multiple probe design, and one (Scheithauer & Tiger, 2012) used a multiple baseline design. In addition, one study used a qualitative design (Abd Aziz et al., 2023), another used an experimental (Hatzigiannakoglou & Kampouraki, 2016), and another used a multidisciplinary team approach (Lee & Foo, 2010). In addition, no clear information was given regarding the design used in four studies (Lee & Lee, 2021; Sasaki et al., 2007; Scheithauer et al., 2013; Kapperman et al., 1996).

Participant Findings

When the studies were reviewed, it was determined that they generally focused on pre-service teachers (Lee & Lee, 2021; Putnam & Tiger, 2015; Putnam & Tiger, 2016; Scheithauer & Tiger, 2012; Scheithauer et al., 2013). In addition, some studies deal with teachers (Kapperman et al., 1996) and students (Sasaki et al., 2007) as target groups. In terms of explaining the characteristics of the study groups (e.g., age, gender), it was noteworthy that very few studies included this information. One study included general statements about the participants (e.g., teacher, family), while no number was given (Lee & Foo, 2010). In two studies (Abd Aziz et al., 2023; Hatzigiannakoglou & Kampouraki, 2016), there was no participant information in these studies, as they dealt with purposes such as providing information about braille instruction and introducing the use of the system.

Data Collection Findings

When the related studies were reviewed, researchers used different data collection tools. It is noteworthy that the researchers frequently used data collection tools such as braille translation/braille text reading (Kapperman et al., 1996; Lee & Foo, 2010; Putnam & Tiger, 2015; Putnam & Tiger, 2016; Scheithauer & Tiger, 2012; Scheithauer et al., 2013), log records (Lee & Lee, 2021; Putnam & Tiger, 2015; Sasaki et al., 2007), oral reading fluency (Putnam & Tiger, 2015; Putnam & Tiger, 2016; Scheithauer & Tiger, 2012; Scheithauer et al., 2013). In addition, data collection tools such as proficiency tests (Kapperman et al., 1996), perception scales (Lee & Lee, 2021), checklists (Lee & Foo, 2010), and letter recognition tests (Scheithauer & Tiger, 2012) were also used.

Data Analysis Findings

The data analysis techniques in the studies examined within the scope of this research varied. For example, three studies analyzed data through graphical analysis (Putnam & Tiger, 2015; Putnam & Tiger, 2016; Scheithaue & Tiger, 2012). In addition, the t-test, one of the parametric analysis methods, was used in one study (Scheithauer et al., 2013). Lee & Lee (2021) used descriptive statistics, while Abd Aziz et al. (2023) used document analysis. Although Kapperman et al. (1996) mentioned qualitative and quantitative data analysis techniques, they needed to clearly state which techniques they used. Data analysis was not provided in some studies since the purpose of introducing, informing, and designing the system was addressed (Hatzigiannakoglou & Kampouraki, 2016; Lee & Foo, 2010; Sasaki et al., 2007).

Findings Related to Software

The software used in the studies reviewed within the scope of this research varied. For example, one study stated that MS-DOS-based software was used (Kapperman et al., 1996). Another study mentioned an Android-based mobile application (Hatzigiannakoglou & Kampouraki, 2016). Similarly, another study focused on websites for teaching braille (Abd Aziz et al., 2023). In some studies, web-based learning systems (e.g., MOOC) concerning braille teaching have been the subject of (Lee & Foo, 2010; Lee & Lee, 2021). In most of the reviewed studies (n=5), it was determined that computer software (e.g., VBT) or computer-based learning systems were used for braille instruction (Putnam & Tiger, 2015; Putnam & Tiger, 2016; Sasaki et al., 2007; Scheithauer & Tiger, 2012; Scheithauer et al., 2013).

DISCUSSION

The researchers reviewed the studies on teaching braille to sighted individuals through technology in this study. Thus, the aim was to draw attention to the use of technology in braille teaching and to present a descriptive picture for researchers working on braille. In this context, ten studies that met the inclusion criteria of the study were analyzed according to a) purpose, b) research design, c) participants, d) data collection tool, e) data analysis, and f) software/hardware variables. The researchers discussed the data obtained within the framework of the literature.

It is essential for sighted individuals, especially teachers, to know braille for various purposes, such as preparing materials for students with visual impairments, providing feedback and correction, supporting their academic skills, and providing effective teaching (Bell, 2010; Lee & Foo, 2010). In this respect, preparing teachers for braille is an important research area (Lillie & Tiger, 2019). The literature suggests that sighted individuals can learn braille with sufficient motivation and appropriate methods (Bola et al., 2016). It is essential to use various easily accessible software or teaching programs during braille teaching (Putnam & Tiger, 2015). The software used in the reviewed studies also varied. For example, it was also determined that web-based or computer-based learning systems, such as MS-DOS-based or Android-based software, were used. Different software forms can be encountered since the year range was not defined in the reviewed studies. Considering that MS-DOS-based software is somewhat older, Android-based mobile applications are more frequently the subject acquired. Some studies in the literature (e.g., Hoskin et al., 2024; Subakan & Koç, 2019) show that various software and mobile applications are used. This can be considered a feature that overlaps with this research regarding the variety of software used. In addition, it is noteworthy that the studies reviewed within the scope of the research were conducted for different purposes, such as designing a system for teaching braille to sighted individuals, examining existing programs, developing games, and evaluating the system's effectiveness. Therefore, it is possible to come across studies conducted on teaching braille to sighted individuals for different purposes. These studies indicate that effective braille teaching to sighted individuals can be achieved through web-based or computer-aided/technology-supported braille teaching.

Advances in technology can offer new opportunities to access braille (Martiniello et al., 2018). However, sighted individuals may experience various difficulties in learning braille. For example, one of these difficulties is braille's tactile and complex structure, which limits practicing and receiving feedback (Aslan et al., 2024). On the other hand, the lack of trained trainers with braille competence to provide braille education can be expressed as another limitation (Kana & Hagos, 2024; Putnam & Tiger, 2016; Rahimi et al., 2018). Lillie & Tiger (2019) argue that the challenges related to braille teaching are unlikely to be solved shortly, but increasing individuals' braille proficiency may be an alternative in the short term. Therefore, adequate systems and methods are needed to teach sighted individuals braille (Sasaki et al., 2007; Scheithauer & Tiger, 2012). At this point, using technology in braille teaching is considered one of the promising applications (Lee & Foo, 2010). The use of technology in teaching braille to sighted individuals brings advantages such as increasing interest in braille, facilitating learning and accessibility, and increasing the effectiveness of learning (Abd-Aziz et al., 2023). The ubiquitous accessibility of

teaching braille to sighted individuals is a solution that can overcome the shortage of qualified trainers (Putnam & Tiger, 2015).

It was determined that the research designs used in the reviewed studies were various. For example, while it is noteworthy that single-subject, qualitative, experimental, etc. research designs were used, some studies did not include direct information about the research design used. In the literature, similar results were obtained in the studies conducted as a literature review, and various research designs were used in the studies examined. For example, Aslan (2021), who performed a descriptive analysis of theses on braille, stated that various research designs were preferred in the relevant theses. In a study examining studies on the use of technology in special education (Kurt & Kurtoğlu-Erden, 2020), it was reported that various research models were used, and there were studies in which the research model was not specified. Similarly, Coşkunçay & Horzum (2022) stated that various research designs were used in their study to examine theses on individuals with visual impairments. In addition, researchers drew attention to the fact that some research designs were not used. Aslan & Özkubat (2019) emphasized that various research designs were used in the conference proceedings they examined and that there were studies without research model information. Another review study (Hoskin et al., 2024) explained that various research designs were used, such as case study, cohort design, and single-subject design. A similar situation is seen in the study conducted by Sözbilir et al. (2015). Based on these findings, it can be said that there is a similarity between the results obtained from this study and the results of the studies in literature. However, the limited number of studies reviewed in this study can be considered as a factor to be considered at the point of data interpretation. Although these findings indicate that the research designs used are various, the number of studies reviewed may require caution in generalizing the data. However, another important finding is that there were studies in which the research model was not reported. When these studies are examined, it is seen that they are generally studies that provide information about a subject or design or make a product or design. Studies support this finding in the literature (e.g., Aslan & Özkubat, 2019; Kurt & Kurtoğlu-Erden, 2020). Similarly, in these studies, it is seen that designs are not reported in studies such as design-based or systematic review studies.

When the related studies are examined, it is noteworthy that the researchers utilized various data collection tools such as braille translation/braille text reading, log recording, and oral reading fluency tests. Accordingly, the researchers used various data collection tools. In addition, it can be interpreted that the researchers diversified their data collection tools according to their research topics or the variables they examined. Similar to these findings, it is emphasized that various data collection tools are used in some systematic review studies (e.g., Coşkunçay & Horzum, 2022; Hoskin et al., 2024; Kurt & Kurtoğlu-Erden, 2020; Sözbilir et al., 2015). In this context, there is a similarity between the results obtained and the results of the studies in literature. More than one data collection tool was found in the reviewed studies. This situation may affect the relevant study's validity and reliability and contribute to its quality (Sözbilir & Kutu, 2008). The similarity in data collection techniques also manifests in the data analysis techniques.

In the studies reviewed within the scope of this research, various data analysis techniques were employed. It was determined that graphical analysis, descriptive statistics, and document analysis were used. In some studies, in the literature, content analysis and descriptive statistics are primarily used (e.g., Coşkunçay & Horzum, 2022; Sözbilir et al., 2015). The data analysis techniques used in the studies are thought to be related to the preferred research model. For example, it can be predicted that graphical analysis will generally be preferred in studies using a single-subject research design. The studies reviewed in this study determined that advanced analysis techniques (e.g., MANOVA, regression, structural equation) were not used. This situation may be related to research designs as well as the lack of experience of the researchers (Erdem, 2011). Therefore, it can be suggested that researchers should conduct new studies on braille teaching in which other (advanced) data analysis techniques will be used. At the same time, some studies did not provide any information about data analysis methods. In parallel with this finding, it was stated that data analysis information was not included in some studies (e.g., Coşkunçay &

Horzum, 2022; Sözbilir et al., 2015). When these studies are examined, it is seen that they generally address objectives such as system introduction or providing information. Therefore, the care should be taken to generalize these results. The limited number of studies on braille teaching causes the reviewed studies to be limited. Thus, the results obtained in this study may have resulted from the fact that studies on braille were examined.

Some studies included teachers, rehabilitation counselors, or parents as participants in the studies reviewed. In addition, it was found that these studies mainly involved undergraduate students (e.g., Putnam & Tiger, 2015; Scheithauer & Tiger, 2012; Scheithauer et al., 2013). In this respect, the situation obtained from the research is like the findings in the literature. For example, it is seen that some studies on the use of technology in braille instruction were conducted with undergraduate students (e.g., Koenig & Robinson, 2001; Lillie, 2017; Putnam, 2013; Putnam, 2015). It is thought that undergraduate students studied with the assumption that they are like teachers in terms of demographic characteristics. In addition, cost and convenience are also effective in reaching undergraduate students. The ease of collecting data from the participants in this group and the advantages in terms of the permission process, time, and cost can be considered as the reasons for preferring to work with this group (Alper & Gülbahar, 2009; Selçuk et al., 2014).

In addition to all this, this research has some limitations. First, the studies reviewed within the scope of the research were obtained from Web of Science, ERIC, Academic Search Ultimate, Google Scholar, and Scopus electronic databases. Secondly, the reviewed studies were found with keywords “braille,” “technology,” “sighted,” “computer,” “software,” and “teaching” and the word combinations “braille and technology,” “braille and sighted and technology,” “braille and computer,” “braille and software,” “braille and sighted,” “braille and teaching,” and “sighted and braille and teaching.” Thirdly, the studies reviewed consist of 10 studies published in a peer-reviewed journal, the full text of which can be downloaded, whose target audience is sighted individuals, and which address technologies/software/hardware related to Braille education. Lastly, the findings of this research were analyzed in the context of variables of a) purpose, b) research design, c) participants, d) data collection tool, e) data analysis, f) software/hardware, and g) findings.

CONCLUSION

As a result of the research, it was determined that the studies examined were mainly conducted to introduce software or provide information/examine existing software or resources and evaluate the effect of a computer-based program. In addition, the researchers revealed that mostly single-subject design studies were conducted. Almost all the participants in the studies were undergraduate students. In all these studies, researchers collected data by recording within the software, braille, and printed reading passages and analyzed them primarily through graphical analysis. Finally, it was revealed that there were more studies in which information about the software and the revisions made according to the test of the software were presented as qualitative findings.

RECOMMENDATIONS

It is noteworthy that various research designs, data collection tools, and analysis techniques were used in the study. However, more research is needed on braille teaching. Therefore, there is a need for experimental studies that can provide more evidence for further research. Studies on software that can run on different operating systems can be designed. In addition, researchers can develop new software on the subject and contribute to producing new research on this subject. In addition, further studies can be planned to include teachers and families as participant groups. Researchers working on the subject in future studies can apply data collection methods such as interviews and observations that are not used at all or rarely used, such as questionnaires and scales. Similarly, it may be suggested that studies be planned with research designs, especially mixed designs, which are never or are limitedly used. Finally, new studies can be conducted beyond the limitations mentioned in the limitations section of the study (e.g., searching

different databases, using different keywords, addressing these, etc.).

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Prospective Turkish Language Teachers' Perceptions of Summarization: Definitions, Rationales and Rules

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ABSTRACT

The aim of this study was to determine prospective Turkish language teachers' perceptions of the concept of summarization. The study group consisted of 139 teacher candidates enrolled in the 1st, 2nd, 3rd, and 4th grades of the Turkish Language Teaching department in the faculty of education of a state university in 2019. A phenomenological design, a qualitative research pattern, was employed in the research. The data analysis was conducted using the Nvivo 10 software. Research data was gathered through a standardized open-ended interview form consisting of three questions. The research findings indicated that the students predominantly summarize based on what they read (f=76), and hear (f=19), from books (f=12), and events (f=12). Regarding the definition of summarization, the students mostly defined it as "writing without changing the essence" (f=84), "shortening" (f=81), and "writing essential parts" (f=51). The identified rationales for summarization were primarily "providing opportunities for permanent learning" (f=65), "preventing waste of time" (f=48), and "remembering essential parts" (f=39). As for summarization rules, the students mostly paid attention "not to deviate from the main idea" (f=69), "to write essential parts" (f=64), and "to remove unessential parts" (f=57).

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INTRODUCTION

It has been seen that many definitions have been made about summarization in literature. For instance, summary as defined by Keçik and Uzun (2004, p. 88), Dilidüzgün (2013) and Neupane (2021), refers to concise written or oral narratives that highlight significant points forming the meaning while omitting the details of the text. The ability to craft a concise, precise, and accurate summary serves as a crucial foundation, particularly in the realms of analytical and technical writing (Frey, Fisher & Hernandez, 2003). Proficiency in summarization implies a student's capability to identify the crucial elements of the text, to eliminate trivial details, and, in a broader sense, to demonstrate analytical and synthetic skills.

Students can demonstrate their understanding of the entire text through summarization (Shelton, Lemons & Wexler, 2021). To summarize a text effectively, one must comprehend it thoroughly, condense provided information into a list, eliminate irrelevant details, and formulate topic sentences. Subsequently, the summarized text should be compared to the original text in terms of essential viewpoints and coherence (Görgen, 1999, p. 23-28). The summary should encapsulate the main and supporting ideas of the source text, maintaining adequacy and conciseness while excluding trivial information. It should be articulated in the summarizer's own words (Aleksenko, 2021, p. 9; Gedikoğlu, 2011; Shodieva, 2023). The purpose of a summary is to facilitate the learning of the main idea and key details in a much shorter form than the original. While doing this, special attention should be paid to convey the information accurately and consistently (Frey, Fisher & Hernandez, 2003). Because it should not be forgotten that summarizing is among the high-level skills.

Summaries are mainly created with reference to what individuals read, hear, or watch. The sources utilized for reading, listening, or watching are highly diverse, encompassing books, encyclopedias, magazines, newspapers, television, computer, tablet, and phone as well as various daily-life sources such as posters, billboards, and signs not to mention the multitude of technological tools like. Technology has also made many texts accessible in visual, auditory, or audio-visual formats. However, students may find summarizing what they hear or watch more challenging when compared to summarizing what they read as it is not always possible to access the text. Despite being perceived as a simple activity or a teaching technique, summarization is not as straightforward (Gündüz & Şimşek, 2011, p. 151; Klein, 1988). In fact, Çelik and Doğan's (2022) study revealed a lack of theoretical and practical knowledge among teacher candidates in the context of summarization, emphasizing that this deficiency contributes to difficulties in creating and teaching summaries.

Research indicates a positive and significant correlation between the frequency of use of summarization strategies and success in summarization (Çetinkaya, Şentürk & Dikici, 2020). Teaching students what summarization is and the strategies employed in summarization can facilitate their learning process. However, some studies highlight deficiencies in this regard. For instance, Ulaş and Yılmaz's (2021) study addresses the challenges secondary school students face in summarization based on the perspectives of Turkish language teachers. The results of that study revealed that 97% of Turkish language teachers acknowledged that secondary school students have difficulties in summarization, with 89% noting that students tend to use sentences directly from the author, 86% observing a tendency to cover the entire topic, and 57% stating that students are not provided with examples of how to generate summaries using sample texts. According to Bahçıvan and Çetinkaya (2021), teachers often assign novel or text summarization tasks to students, if they possess summarization skills. Tasks beyond students' capabilities can lead to a negative attitude towards summarization.

Summarization varies depending on the genre and narrative characteristics of the text. Narrative texts, such as stories and novels, as well as informative texts like memoirs, essays, and travel writings, can be easily summarized. However, summarizing scientific writings like encyclopedia entries and articles proves to be quite challenging (Gündüz & Şimşek, 2011, p. 151). Narrative texts possess a linear

structure, whereas informative texts entail more complexity and often incorporate unconventional ideas (Spivey & King, 1989). Consequently, the text genre should be taken into consideration when engaging in summarization. The most effective method of teaching summarization is to instruct students on organizing their summaries according to the structure of the text. Understanding the structure of the text can facilitate the process of summarization (Yakoub & Lemzeri, 2020, p. 23). In narrative texts, the chronological order of events is crucial, whereas in informative texts, propositions that form the backbone of the text become significant when summarizing (Uzun-Subaşı, 2003).

A large body of research has indicated that the text genre significantly influences students' summarization success. For instance, in a study conducted by Bulut and Akyol (2014), it was found that both students and teachers demonstrated more successful utilization of summarization criteria in narrative texts compared to informative texts. Similarly, a study by Taşdemir and Çağlayan Dilber (2021) revealed that the means prospective teachers had in using summarization strategies in event-based texts were higher compared to informative texts. However, there are also some studies with different findings from the results mentioned here. For instance, in a study conducted by Kurnaz and Akaydın (2015), it was determined that prospective teachers found summarizing informative texts easier than narrative texts. Another study conducted by Doğan and Özçakmak (2014) evaluated three text genres, concluding that students were better at summarizing argumentative texts compared to informative and narrative texts.

Since summarization is a higher-order skill, it covers various abilities and has a function to test accurate comprehension. In recent years, there has been a noticeable increase in academic studies on summarization in Türkiye. A bibliometric study conducted by Ipek and Ensar (2022) examined 22 theses and 40 articles about summarization. The findings of the study indicated that teachers, prospective teachers, and students across different educational levels do not consistently demonstrate the desired level of proficiency in terms of summarization success and the use of summarization strategies while various methods and techniques enhance summarization. Moreover, studies have suggested that Turkish language teaching programs and textbooks do not meet the required standards in providing students with summarization skills.

As summarization is a skill acquired and developed through instruction, it necessitates teachers to serve as role models and to encourage students to write summaries (Duran & Özdil, 2018). In a study conducted by Yüksel and Demir (2022), it was reported that prospective teachers often perceive summary as a shortened version of the main text and lack sufficient knowledge about other components of summarization. In our study, on the other hand, it was aimed to reveal how university students perceive summarization, a skill utilized by students at all stages of academic life (Epçaçan, 2018, p. 13). It is necessary to reveal how summarization, which is shown among the high-level skills and concerns all verbal or numerical courses, is defined, for what reasons and by what rules it is done, specifically for Turkish teacher candidates. In this context, this research is important as it provides more detailed insights into whether students correctly grasp the concept of summarization.

METHOD

The primary objective of this study was to determine the prospective Turkish language teachers' perceptions of the concept of summarization. The sub-objectives of the research involved determining the perceptions of the prospective Turkish language teachers in the context of "sources of summarization", "definitions of summarization", "rationales of summarization" and "rules of summarization".

Research Design

The research employed phenomenological design, a qualitative research pattern. According to Yıldırım and Şimşek (2016, p. 69), "phenomenology establishes a suitable research framework for studies that aim to investigate phenomena that are not entirely unfamiliar to us apart from being not fully understood".

Participants

This study was carried out with voluntary participation of 139 prospective teachers enrolled in the 1st, 2nd, 3rd, and 4th grades of the Turkish Language teaching program at a state university in 2019. The study employed "convenience sampling", one of the purposive sampling methods. Convenience sampling involves selecting participants who are easily accessible, suitable for the research, and voluntary to participate (Gravetter & Forzano, 2012). The demographic data of the participants are presented in the table below.

Table 1. *Demographic data of the participants*

	Gender			
Grade	Female	Male	*N*	*%*
1st Grade	20	20	40	29
2nd Grade	19	14	33	24
3rd Grade	22	19	41	29
4th Grade	14	11	25	18
N	75	64	139	100
%	54	46	100	-

Table 1 shows that 54% of the participants are females, while 46% of them are males. 29% of the study group are first graders, along with 24% second graders, 29% third graders, and 18% fourth graders.

Data Collection and Analysis

The study collected data using a standardized interview form with the aim of revealing students' perceptions of summarization. "Interview forms are used to obtain similar information from different individuals by focusing on similar topics" (Patton, 2002).

In the interview form, the students were asked the following questions:

1. What is summarization?
2. Why do you engage in summarization?
3. What aspects do you pay attention to when summarizing?

In the study, based on the students' perceptions, "definitions of summarization" were determined through the first question, "rationales of summarization" were identified through the second question, and "rules of summarization" were derived from the third question. Additionally, "sources of summarization" were analyzed based on the students' responses. The data were analyzed using the Nvivo 10 software program. Content analysis was employed to analyze the students' opinions. Content analysis is defined as "the process of coding and quantifying what people write and say in a clear manner by systematically analyzing written and verbal materials" (Simon & Burstein, 1985, p. 193). To prevent data confusion, each student was assigned a unique code. The qualitative analysis process, beginning with the first paper of the first-grade teacher candidates, was completed with the last paper of the fourth-grade teacher candidates. Throughout the process, the analysis was restarted by going back to the beginning and incorporating the new themes into the existing ones whenever new themes emerged. To prevent data loss, the themes were checked three times from the beginning to the end. Initially, the sources of summarization were identified based on the students' opinions. Subsequently, within the context of the questions in the interview form, the students' "definitions of summarization", "rationales of summarization", and "rules of summarization" were determined.

During the process of writing their responses, the students were not subjected to paper or time constraints, and they were informed that they could end the task at any time. The implementation, conducted in one lesson hour for each grade level, was completed within four lesson hours. No explanations were provided regarding summarization to avoid influencing the students' perceptions, and

it was paid special attention to ensure that the students did not exchange views during the implementation.

Validity and Reliability

To ensure the internal validity of the study, a literature review was conducted, and studies like the subject of the research were reviewed in terms of the processes followed. During the analysis, attention was paid to formulating themes that encompassed the relevant components while excluding the irrelevant ones, and the data were checked three times. To enhance the external validity of the research, the processes followed in the study were detailed in the section of method. To ensure reliability, the "intercoder agreement" suggested by Miles and Huberman (1994) was utilized. The agreement rate between the coders, the researcher and a Turkish language education expert, was 88%. This rate was considered sufficient for the reliability of data.

Ethics

I hereby confirm that scientific and ethical principles were adhered to throughout the preparation process of this study, the subjects willingly participated in the research, and all the studies benefitted from were included in the references. Also, the data of the research were collected in 2019.

FINDINGS

Based on the prospective teachers' perspectives, sources, definitions, rationales, and rules of summarization were included in this section.

Table 2. *The sources of summarization according to the prospective teachers*

Source of Summarization	*f*	%	Source of Summarization	*f*	%
What they read	76	46	Novels	4	2,0
What they listen to	19	12	Articles	2	1,2
Books	12	7	Paragraphs	2	1,2
Events	12	7	Presentations	2	1,2
Speeches	10	6	Situations	1	0,6
Ideas	7	4	Visuals	1	0,6
Lecture notes	6	4	Conferences	1	0,6
Stories	5	3	Statements	1	0,6
What they watch	4	2	**Total**	**165**	**100**

As shown in Table 2, the prospective teachers primarily consider what they read, listen to, books, and events, respectively, as the most significant sources for summarization.

Table 3. *The definitions of summarization according to the prospective teachers*

Definition of Summarization	*f*	%	Definition of Summarization	*f*	%
Writing without changing the essence	84	19	Limiting the topic	4	0,9
Shortening	81	19	Accessing the key words	4	0,9
Writing essential parts	51	12	Writing while adhering to the plot structure	4	0,9
Finding the main idea	35	8	Getting prepared for the topic	3	0,7
Eliminating trivial details	32	7	Writing according to the text genre	2	0,5
Writing in one's own words	31	7	Reconstructing the text	2	0,5
Writing what is retained in the memory	22	5	Writing chronologically	1	0,2
Writing in an explanatory manner	17	4	Writing by considering the titles.	1	0,2
Writing regularly	11	3	A method	1	0,2
Transforming into a text	11	3	Keeping in electronic format	1	0,2
Writing for easy learning	10	2	Avoiding from adding own comment	1	0,2
Getting preliminary information	10	2	Writing the parts of introduction, body, and conclusion	1	0,2
Writing one's own comment	6	1	Writing the topic	1	0,2
Taking notes	5	1			
Explaining verbally	5	1	**Total**	**437**	**100**

According to Table 3, 139 prospective teachers expressed 437 opinions under 28 themes. It was found that the prospective teachers defined summarization as "writing without changing the essence" (f=84), "shortening" (f=81), "writing essential parts" (f=51), "finding the main idea" (f=35), and "eliminating trivial details" (f=32). The ratio of these opinions to all opinions was approximately 65%.

Table 4. *The rationales of summarization according to the prospective teachers*

Rationales of Summarization	*f*	%	Rationales of Summarization	*f*	%
It provides opportunities for permanent learning.	65	13	It helps me classify the text.	7	1,0
It prevents waste of time.	48	10	It provides me with prior knowledge.	5	1,0
It helps to remember essential parts.	39	8	It gives me to criticize accurately.	4	0,8
It provides convenience during exams.	38	8	It prompts creative thinking.	3	0,6
It saves me from unessential information.	37	8	It simplifies the text.	3	0,6
I reach the main idea directly.	36	7	It provides psychological relief.	3	0,6
It helps me learn the main points.	36	7	It improves reasoning skills.	2	0,4
I understand how much I have learnt about the subject.	27	5	I am getting prepared for new learning.	2	0,4
It enables fast learning.	25	5	It improves my ability to form sentences.	2	0,4
It enables concretization of the subject.	22	4	I can convey my learning to others.	2	0,4
It provides concise expression.	22	4	It can be used in every aspect of life.	1	0,2
I can't keep the entire topic in my mind.	20	4	It allows me to review the subject last time.	1	0,2
It makes my tasks easier.	14	3	It leads me towards conducting research.	1	0,2
I access useful information.	12	2	It improves concentration.	1	0,2
It helps remembering.	11	2			
It makes information organized.	7	1	**Total**	**496**	100

As indicated in Table 4, the prospective teachers' 496 opinions were gathered under 30 themes, and their summarization justifications were listed as "It provides opportunities for permanent learning" (f=65), "It prevents waste of time" (f=48), "It helps to remember essential parts" (f=39), "It provides convenience during exams" (f=38), and "It saves me from unessential information" (f=37). The ratio of these opinions to all opinions was approximately 46%. "not to deviate from the main idea" (f=69), "to write essential parts" (f=64), and "to remove unessential parts"

Table 5. *The rules of summarization according to the prospective teachers*

Rules of Summarization	**f**	**%**	**Rules of Summarization**	**f**	**%**
Not deviating from the main idea	69	13	The length of the original text	6	1,0
Writing essential parts	64	12	Writing down the memorable parts	5	1,0
Removing unessential parts	57	11	Listening to carefully	5	1,0
Writing in one's own words	40	8	Writing in simple present tense	4	0,8
Shortening the text	38	7	Being useful	4	0,8
Making the text comprehensible	34	7	Paying attention to the words to be chosen	4	0,8
Creating a summarization plan	32	6	Telling in brief	3	0,6
Not writing all the things	19	4	Obeying spelling and orthographic rules	3	0,6
Writing consistently	18	4	Making the writing legible	3	0,6
Reading carefully	16	3	Summarizing by purpose	2	0,4
Avoiding from direct transfer	12	2	Generating grammatically correct sentences	2	0,4
Not including one's own comments	11	2	Writing the details as well	1	0,2
Ordering the events chronologically	10	2	Reading too many books	1	0,2
Writing by identifying key words	8	2	Conducting research about the text	1	0,2
Summarizing by text genre	8	2	Making sure that I understand the text	1	0,2
Writing supporting ideas	8	2	Necessary materials for summarization	1	0,2
Expressing with the main lines	7	1	Summarizing without wasting time	1	0,2
Adhering to the text	7	1	Interpreting	1	0,2
Providing accurate information	6	1	Using fluent language	1	0,2
Not equivocating	6	1	**Total**	**519**	**100**

As indicated in Table 5, it was revealed that the rules the prospective teachers paid attention to in summarization were "not deviating from the main idea" (f=69), "writing essential parts" (f=64),

"removing unessential parts" (f=57), "writing in one's own words" (f=40), and "shortening the text" (f=38). The ratio of these opinions to all opinions was approximately 52%.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

In our study, it was revealed that the prospective teachers predominantly use reading materials, listening materials, books, and events as sources of summarization. Regarding the definitions of summarization, it was found that the prospective teachers mostly incorporate definitions such as "writing without changing the essence" (f=84), "shortening" (f=81), "writing essential parts" (f=51), "finding the main idea" (f=35), and "eliminating trivial details" (f=32). Based on the prospective Turkish language teachers' perspectives, summarization can be defined as "a novel form in which essential information is extracted, trivial details are omitted, and the main ideas are preserved without changing the essence of the original text, resulting in a shortened version." It was also understood that some prospective teachers confused the concepts of summarization and note-taking (f=5). In fact, a study conducted by Özçakmak and Sarıgöz (2019) revealed that 3.3% of prospective teachers confused notetaking and summarization. It was implied from the definitions of some prospective teachers (f=6) that "summarization involves interpretation". However, Gao, Chen, Li, Ren, Bing, Zhao and Yan (2019) stated that interpretation does not fit well into a summary. In a case study conducted by Xiaodan (2019), the impact of a candidate's weak perception on the validity of summarization was investigated. The interventions, conducted in the form of teaching, experience, practice, and reading, resulted in an increase in the candidate's summarization scores. It was claimed that the ability to distinguish main ideas and details improved.

In terms of rationales of summarization, it was determined that the prospective teachers predominantly emphasized opinions such as "it provides opportunities for permanent learning" (f=65), "it prevents waste of time" (f=48), "it helps to remember essential parts" (f=39), "it provides convenience during exams" (f=38), and "it saves me from unessential information" (f=37). Accordingly, the prospective teachers' rationales of summarization were mainly related to learning and exam anxiety. In addition to these, there were also some who put forward rationales such as narrative ability (f=22), text classification (f=7), accurate criticism (f=4), creative thinking (f=3), psychological relief (f=3), and developed sentence formation skills (f=2). In a study conducted by Iguasnia Guala (2021), it was noted that the participant students provided responses about summarization such as "it helps me understand the main idea" and "it assists me in comprehending the text more easily". Similar to our study, Dilidüzgün (2013) reported that the teachers engaged in summarization with purposes such as "assessing understanding", "developing comprehension skills", "understanding and expressing the text in general terms", and "analyzing the subject, main idea, and message".

As for the rules of summarization, the prospective teachers predominantly emphasized expressions such as "not deviating from the main idea" (f=69), "writing essential parts" (f=64), "removing unessential parts" (f=57), "writing in one's own words" (f=40), and "shortening the text" (f=38). Therefore, the majority of the prospective teachers paid attention to finding the main idea, distinguishing between important and unimportant information, writing in their own sentences, and shortening the text when summarizing. On the other hand, some prospective teachers considered different aspects while summarizing. Some prospective teachers mentioned rules of summarization such as paying attention to the text genre (f=8), adhering to the text (f=7), considering the length of the text (f=6), using simple present tense (f=4), ensuring the legibility of the writing (f=3), and summarizing without wasting time (f=1). Görgen (2014) reported some findings supporting our results indicating that the most successfully obeyed rule in students' summaries is "removing sentences containing unimportant and irrelevant information". Hare and Borchardt (1984) formulated the effective summary indicator as the division of the number of important ideas by the number of words used in the summary. Therefore, it can be suggested that the most fundamental rule in summarization is to identify essential information and write it in a concise form.

LIMITATIONS AND IMPLICATIONS

Teachers should assess whether students have misconceptions or deficiencies in summarization by asking them to define summarization. For students with misconceptions about summarization, teachers should provide informative and practical activities. To be more helpful to students, teachers should enhance their own summarization skills. They should promptly address any theoretical and practical shortcomings in summarization. For this, they can investigate and implement summarization strategies to be used in their lessons. They can provide students with enlightening information about why summarization is used and what rules it covers, as summarization is a skill and strategy used in many courses.

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Pre-service Teacher Education Programs with 21st-Century Skills: Teacher Educators' Experiences

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ABSTRACT

Educating pre-service teachers to meet the demands of the 21st century and integrating 21st-century skills into the programs is a long-standing debate. This phenomenological study aims to understand and discover teacher educators' experiences and perceptions leading to a pre-service teacher education program integrated with 21st-century skills. By employing transcendental phenomenology, the study describes the phenomenon through the perspectives of 12 teacher educators from various global contexts. Hence, a criterion sampling strategy was adopted, and 12 teacher educators with experiences in 21st-century skills were selected as participants. The data collected through semi-structured interviews with the teacher educators were analyzed based on the content analysis, including iterative reading and debriefing processes. The findings highlighted that a pre-service teacher education program comprising 21st-century skills in a well-designed and integrated way is vital no matter the country's context. Accordingly, this program should cover multiple literacy and skills integrated based on students and the government's needs as well as discipline. Furthermore, it should provide both on-campus and off-campus learning experiences encouraging collaboration, inquiry, and options. By approaching the whole program development process with an evolutionary perspective, it should be revised and renewed by following the advancements. In a collaborative management context, it should also be facilitated through training, time, autonomy, freedom, and resources for teacher educators.

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INTRODUCTION

Knowledge and technology dissemination in the 21st century forces countries to reconstruct their education system, and they mostly result in legislative reforms, curriculum reviews, or complementary objectives in the legislation about curricula (Gordon et al., 2009). However, a persistent gap between intended policy and actual practice is frequently highlighted in the studies (Law, 2009; Young, 2003) because of the difficulty in implementing the curricular changes in real life. Unfortunately, changing education policies to meet 21st-century skills is not enough to provide students with these skills (Alan & van der Velden, 2012). Within this scope, the literature argues how to ensure that 21st-century skills are not just an aspiration but a tangible component of students' education. Tangney and others (2023) assert that the lack of qualified teachers is also an obstacle to the implementation of 21st-century skills. Eisner (1995) points out that the agenda for genuine educational reform and significant teacher preparation for the 21st century can only be achieved when teacher educators give up old habits. Similarly, Uyar (2023) underscores the crucial role of teacher educators and education faculties in helping pre-service teachers acquire 21st-century skills. However, the lack of teacher education programs aligned with 21st-century skills could prevent pre-service teachers from graduating with the skills required by today's demands and leave teacher educators unprepared to implement innovative methods (Almazroa & Alotaibi, 2023). Therefore, the argument should be directed to teacher preparation by raising questions on educating teachers for the 21st century and what kind of teacher education programs are needed. Answering these questions requires improving the quality of education and equipping pre-service teachers with the competencies needed to teach effectively in the 21st century (Gümüş, 2022). Nevertheless, the studies predominantly focus on 21st-century skills definitions (e.g., Kereluik et al., 2013; Voogt & Roblin, 2012), countries' policies and reforms regarding 21st-century teacher education (e.g., Gordon et al., 2009; Tan, 2019), and teacher candidates' 21st-century skill qualifications (e.g., Gelmez Burakgazi et al., 2019; Kirbas & Bulut, 2024; Paşa et al., 2022; Uyar, 2023; Yurt, 2023), faculty members' qualifications to teach 21st-century skills (Molla et al., 2023). The studies specifically guiding a pre-service teacher education program integrated with 21st-century skills (e.g., Domine, 2011; Häkkinen et al., 2016; Maphosa & Mashau, 2014) are also in limited numbers. Additionally, as 21st-century teaching and learning do not signify one theory or a set of agreed-upon ideas (Lourie, 2020), this study intends to guide the development of teacher education programs integrated with 21st-century skills by focusing on teacher educators' experiences in curriculum design and teaching processes by adopting a qualitative perspective through a curriculum lens.

21st-Century Skills

The skills needed for effective participation in the knowledge society are argued through the frameworks (The Council of the European Union [EU], 2018; Lemke, 2002; Organization for Economic Co-operation and Development [OECD], 2005; Partnership for 21st Century Skills [P21], 2019). Adopting competence-oriented education, the EU (2018) outlines 21st-century skills with eight competencies on basic skills (literacy, language, numeracy, digital skills), future-oriented life management, entrepreneurship, citizenship, cultural awareness, and expression. A web-based framework, The Project enGauge, defines them regarding digital literacy, inventive thinking, effective communication, high productivity, and information technology skills (Lemke, 2002). While OECD (2005) classifies the skills within three titles (use tools interactively, interact in heterogeneous groups, and act autonomously), P21 (2019) illustrates them through life and career, learning and innovation, information, media, and technology skills. Despite using different names or categorizations, the frameworks mainly propose essential skills for both students and teachers.

21st-Century Teaching Skills and Teacher Education

The changes brought by 21st-century skills to teacher education (Zeichner, 2013) require shaping the programs compatible with these skills (Almazroa & Alotaibi, 2023; Domine, 2011; Gut, 2011; Kausar

& Ajmal, 2024). Some studies attempted to integrate 21st-century skills into teacher education programs by addressing different skills (Ashton & Newman, 2016; Cretu, 2017; Häkkinen et al., 2016; Maphosa & Mashau, 2014; Shidler, 2024; Tan, 2019; Yeşilçınar & Aykan, 2022). For example, Häkkinen et al. (2016) developed an approach with collaboration and problem-solving skills. Maphosa and Mashau (2014) addressed teacher candidates' needs, such as digital skills, cultural sensitivity, and responding to diversity within such a program. While Cretu (2017) investigated 4Cs development through an empirical study, Ashton and Newman (2006) examined learning-to-learn competence with blended instruction. In summary, these studies displayed that integrating skills into the programs enhanced student-centered instruction and required a lot of effort for pedagogical practices.

However, some studies suggested integrating 21st-century skills without offering concrete models or developmental frameworks (Aslan, 2015; Greenhill, 2010; Maor et al., 2023; Yost et al., 2000). According to Aslan (2015), effective 21st-century skill development is possible by giving teacher candidates autonomy. The programs should also enhance teacher candidates' ability to design curricula to organize 21st-century skills based on their students' profiles (Greenhill, 2010). They should include critical reflection to improve teacher candidates' ability to handle problems with different perspectives and methods (from action research to constructivist ones) (Yost et al., 2000). Besides, teacher educators are other pillars of 21st-century skills integration and role models (Maphosa & Mashau, 2014). They should organize teaching processes, provide opportunities for skill development, and check teacher candidates' progress (Bozkurt, 2021; Urbani et al., 2017). Moreover, they should work collaboratively on using the skills in their lessons (Adeosun, 2014) through project-based studies (Tan & Chua, 2024), face-to-face and virtual interaction, and so on.

The successful role of teacher educators in imparting these skills can be attributed to the consistent teacher education policies (Alahmad et al., 2021). Teacher candidates must develop pedagogical approaches and technological teaching techniques during their pre-service education. They must also strive to gain experience and proficiency in these skills throughout their service period to foster 21st-century skills (Almazroa & Alotaibi, 2023). By embedding 21st-century skills into different courses, pre-service teachers not only acquire skills but also develop collaboration (Gut, 2011). Hence, curriculum integration is an effective method to develop these competencies, allowing students to engage in interdisciplinary learning that mirrors real-world problem-solving (Drake & Reid, 2018). As seen above, the literature on pre-service education argues various ways to integrate 21st-century skills; however, a holistic approach is needed in 21st century (Liu & Low, 2015). The holistic approach emphasizes not only key competence and new literacies but also disciplinary knowledge and values, ensuring a comprehensive integration of 21st-century skills into education (Doryakova et al., 2023). This perspective might also be essential in pre-service teacher education, requiring programs to equip future educators with the ability to design curricula, integrate diverse competencies, and adapt to school-specific learning contexts for effective teaching. Nevertheless, additional research, developments, and experments on the holistic approach are needed (Doryakova et al., 2023). Hence, as a research study on teacher educators' experiences across different countries, this study aims to contribute to the ongoing discourse on curriculum integration, pedagogical strategies, and policy alignment in pre-service education.

As teacher educators have a critical role in seeking and enacting new models and strategies for 21st-century teacher education (Tan, 2019), this study focuses on understanding their experiences and perceptions of a pre-service teacher education program integrated with 21st-century skills. By uncovering their insights, it aims to address the existing gaps in curriculum design and policymaking, offering actionable strategies for integrating 21st-century skills into teacher education. Given the complexity of aligning teacher education programs with rapidly evolving societal and technological demands, the study's findings could provide valuable guidance for educators, policymakers, and researchers. Therefore, this study seeks to answer the following questions:

(1) What can be learned from teacher educators' experiences related to 21st-century skills in pre-service teacher education programs?

(2) How do teacher educators perceive a pre-service teacher education program integrated with 21st-century skills?

METHOD

Research Design

This study employed a phenomenological research design that focuses on researching the meaning of individual experiences (Polkinghorne, 1989) and the definition and interpretation of these meanings in the ways they emerge (van Manen & Adams, 2010). Therefore, gathering several naive descriptions from the participants and regarding the researchers' self-reflections on the phenomenon (Polkinghorne, 1989), the research pursued to develop the meanings of pre-service teacher education programs integrated with 21st-century skills through teacher educators' experiences and perceptions.

Participants

In phenomenological research, all participants must experience the phenomenon studied (e.g., Moustakas, 1994; Polkinghorne, 1989); therefore, the criterion sampling strategy was employed, selecting teacher educators with experiences in 21st-century skills and curricular-related studies. The process began with a literature review using keywords such as 21st-century skills and pre-service teacher education program, resulting in a list of 71 potential participants. After debriefing discussions about the participants' expertise and the country they represent, the potential participants (n= 43) were contacted via email invitations. Participation was voluntary, and data collection continued until data saturation was achieved. Ultimately, 12 teacher educators working in teacher colleges or universities across seven countries participated in the study. Their backgrounds and expertise, which align with the study's aim of integrating 21st-century skills into pre-service teacher education, are summarized in Table 1.

Table 1. *The background information about the participants*

Participant	Country	Years of Experience as Teacher Educator	Expertise Aligning with Study's Aim
P1	Türkiye	Over 20 years	Innovative teacher education models, curriculum development, instructional designs
P2	Cyprus	Over 30 years	Inclusive education and teacher training, the integration of 21st-century competencies in diverse learning environments
P3	Türkiye	Over 20 years	Teacher education for 21st-century, curriculum development, educational sciences
P4	Türkiye	Over 30 years	Curriculum development for pre-service teachers in Türkiye, critical thinking and problem-solving skills
P5	Türkiye	Over 20 years	Curriculum development for pre-service teachers in Türkiye, problem-solving skills, multiculturalism
P6	Türkiye	Over 15 years	Critical thinking, reflective thinking, and curriculum literacy development in pre-service teacher education
P7	The Netherlands	Over 30 years	Educational technology and teacher training, focusing on digital competence and 21st-century pedagogy integration
P8	Cyprus	Over 35 years	Curriculum development for pre-service teachers in Türkiye, instructional design, teacher education
P9	The USA	Over 20 years	Innovative teaching methods in teacher education, including creativity, digital fluency, and interdisciplinary learning
P10	Romania	Over 20 years	Curriculum development in Romania, inclusive education, reflective thinking

P11	South Korea	Over 10 years	Curriculum development in Korea, teacher education and training in the USA, Singapore, and Korea, critical thinking
P12	Austria	Over 10 years	Educational policy, inclusive education, migration

As seen in Table 1, most of the participants were teacher educators with experience in European countries. The study sample included only one participant from each of America and East Asia. Therefore, the data of the study is limited to the phenomena of 21st-century skills and their integration into pre-service teacher education programs of teacher educators in Europe.

Instrument

Semi-structured interviews were utilized to collect data. First, an interview protocol (Creswell & Creswell, 2018) was initially prepared in Turkish, consisting of 13 questions, and reviewed by three experts. Based on their feedback, some questions were revised and modified. Then, two researchers independently translated the protocol into English, and the best-translated version was decided through debriefing. This version was subsequently reviewed by four experts specializing in English and qualitative research. After incorporating their suggestions, the final protocol was refined to include 12 questions, such as: "What comes to your mind when you hear 'a pre-service teacher education program integrated with 21st-century skills'?", "Which 21st-century skills do you include in your lectures and instructions?", and "How would you design a pre-service teacher education program that effectively integrates 21st-century skills?". These questions aimed to explore educators' professional insights, instructional approaches, and perspectives on program development. To ensure clarity, the protocol was piloted with a teacher educator in Turkish before the data collection process began. The interviews lasted approximately 45 minutes each and were conducted between April and June 2021 through online meeting platforms. Depending on the participant's preference, the interviews were managed in either Turkish or English and recorded with their consent. Furthermore, the ethical approval was obtained from the Social and Humanities Scientific Research and Publication Ethics Committee on April 12, 2021, under the approval number 128939.

Data Analysis

The study adopted transcendental phenomenology to describe the phenomenon as it appeared in the meanings and free from suppositions (Moustakas, 1994). Consequently, a content analysis was conducted. Since multiple researchers participated in the study, those with the highest similarity in coding were selected to ensure consistency. For that purpose, the transcriptions were first read and checked individually, and then two interviews were selected randomly for the analysis. Each researcher analyzed these two interviews independently, and the degree of coding similarity was then assessed through debriefing. Based on this process, the first and third researchers were chosen to conduct the data analysis collaboratively.

The data set consisted of 12 semi-structured interviews, totaling approximately 8 hours and 30 minutes of recorded discussions. The recordings were manually transcribed into a total of 146 pages, formatted in Times New Roman, 12-point font, with 1.5 line spacing. The shortest transcription was 8 pages, while the longest reached 16 pages, reflecting the depth of responses from different participants. The data analysis followed iterative reading and debriefing processes. Firstly, two researchers individually gathered textural qualities (Moustakas, 1994) about the program. Second, the initial themes and codes were refined and consolidated through debriefing discussions to achieve freedom from suppositions (Moustakas, 1994). Hence, this iterative process guided the researchers to synthesize the underlying meanings of the program. It should be noted that no program supported by AI was used in this study, and all data was manually analyzed following data collection in 2021. The manual analysis allowed for a deeper, context-sensitive exploration of teacher educators' perspectives, ensuring that the meanings and nuances in participants' responses were carefully interpreted.

Trustworthiness and the Roles of the Researchers

The study utilized multiple researchers, peer review, iterative analysis, and expert opinion strategies to obtain validity. The semi-structured interview protocol was developed based on several experts' opinions, and multiple researchers attended to collecting, analyzing, and interpreting the data procedures. The interviews were transcribed separately by the first two researchers, independent users in English. Data analysis was conducted iteratively, with peer discussions ensuring consistency in coding. Initially, intercoder reliability was assessed using Miles and Huberman's (1994) formula, with the highest similarity rate (76%) observed between the first and third researchers. As this rating fell below the commonly accepted threshold for strong intercoder reliability (typically 80% or higher), additional measures were taken to enhance coding consistency. First, the coding framing (O'Connor & Joffe, 2020) was collaboratively developed between the first and third researchers, which ensured a systematic and transparent approach to coding. Second, regular debriefing sessions were conducted where emerging themes were compared, discussed, and refined by all the researchers (Saldaña, 2013). For instance, through these discussions, consensus was reached on key themes such as program rationale, program development process, program management, and metaphors, while alternative categorizations -such as benefits of 21st-century skills, characteristics of 21st-century teacher education programs, needs for an integrated 21st-century skills program, and recommendations for curriculum development- were reconsidered and refined. By implementing these strategies, the study ensured that coding discrepancies were minimized, and the final thematic framework reflected a shared understanding among the researchers.

On the other hand, the first two researchers, English teachers, and the third one, a professor at a state university, tried to do their best to portray the participants' perceptions and experiences by reducing their suppositions and acknowledging the significance of a good teacher education program. Any experience related to the researchers was bracketed and discussed in the debriefing. Nevertheless, participant feedback was not obtained because of the participants' busy schedules due to the COVID-19 lockdown. However, the researchers took notes during the interviews and asked further questions for clarity to reach the best understanding of the participants' perceptions and experiences.

FINDINGS

The participants' experiences with the program mainly indicated three themes: the program's rationale, design process, and management. Additionally, their perceptions depicting the program were presented with the metaphors they used.

The Rationale for the Program

The participants' reflections on the shortcomings in the pre-service teacher education programs or applications and the demands of today's world indicated the rationale for such a program. Their insights collectively underscored the rationale for rethinking and redesigning pre-service teacher education programs to better align with 21st-century skills. Accordingly, the findings related to this theme are presented as follows:

The participants highlighted shortcomings in the current pre-service teacher education programs, as mentioned by P6: "I think the current programs are far from providing 21st-century skills.". Also, their critiques mainly centered on the inefficiency of these programs in equipping teacher candidates with essential skills. Accordingly, they noted that graduates often lack crucial skills such as techno-pedagogical skills, inclusive education, communication, cooperation, curriculum literacy, and critical thinking. P12 illustrated this gap by stating, "… when they (teachers) do not know anything about inclusive education, it will be really difficult to cooperate." Similarly, P1 underscored the deficiencies in critical thinking and curriculum implementations by asking, "What is the curriculum and how to apply it? ... I find teachers very deficient in raising questions, preparing assignments, and projects using critical

thinking skills."

On the other hand, some participants acknowledged the inclusion of the skills in the programs, but they noted some problems. As P7 mentioned, "Most of them (programs) focus on preparing them (teacher candidates) to be good teachers for an ordinary school. And yes, 21st-century skills are present, but a little bit, it is not in the core of my discussions, definitely not.", the skills in the programs are minimal or not at central focus. Others highlighted the limitations that hinder effective implementation or skill development: "We do not have much space in our program to really run it, design and run it based on this kind of inquiry-based learning or inquiry-based teacher education." (P11). "There is an elective course on critical thinking (in the program). But when you limit it to two hours and an elective course, will this skill improve? Or offering an elective course? I mean, will we limit it to the students who take that course?" (P6)

Besides, the participants remarked on the lack of a specific vision for teacher education at faculties: "There was nothing (vision statement) at the institution. I have not heard it (such a vision) from any administrators. Neither (from) the dean nor the rector. I cannot say that I have witnessed at our university and other universities." (P3). Also, they indicated that current programs are prepared centrally and demand strict implementation, leaving no room for teacher educators to adapt their programs to today's educational needs. P11 illustrated this challenge by stating, "… It is mostly regulated by our Ministry of Education. So, the federal government has a lot of power in controlling the teacher education program because we follow their regulation. And I mean, that is how we want our teacher education and also our public schooling as well."

They also criticized traditional approaches in teaching in terms of the domination of discipline-based knowledge, teacher candidates' characteristics, instructional methods, assessment techniques, and learning levels. Discipline-based knowledge dominance in programs leads to teacher candidates' difficulty in practice, as in the following: "Teachers learn a lot of discipline-based knowledge. But I think many students, those student teachers, they want to know more about how they can actually use this kind of discipline knowledge to really teach the students. … I think that is the confusion or maybe difficulty that our students might have when they become teachers." (P11). Similarly, P4 highlighted the disconnect between theoretical instruction and meaningful learning by stating, "We (Teacher educators) are trying to teach all the accepted theories like learning theories, developmental theories, all the knowledge that found. (However) We cannot gain knowledge either." Besides, the participants noted that traditional teaching approaches and exam-oriented assessment cause teacher candidates to become passive recipients: "How do you make students expressing themselves in the primary school so silent when they come to university? We make children silent, not questioning, not asking, not researching, not expressing themselves." (P5). "(Teacher candidates) take the lecture notes, memorize them, take the exam, and pass." (P3). These insights pointed out that current programs might stifle the essential skills such as creativity, critical thinking, and problem-solving for the 21st century.

Furthermore, the participants highlighted the demands of today's society and classes:

We have classes that have children from very different backgrounds, not just traditionally different, like social class and gender and all that. We have refugees and immigrants now in our classes. We have kids that do not speak the language of the country. And so, we have a very big gap between the children. Some children are better prepared for school, and others are not. … We (Teacher educators) have to prepare them (teacher candidates) for this kind of class, a multi mix-ability class (with) different demands (and) different needs. (P2)

In addition to changing classroom demands, they pointed out the 21st century demands regarding the changing world, labour market, arguments in scientific papers, meeting students' needs, and collaboration. For example, P10 noted that teachers required to prepare the next generation for a rapid world may not teach something they do not have. Additionally, the participants mentioned the demand

of the labour market: "(In) every government, they talk about the need of creative or you know competent human capital or human resources whatsoever." (P11) and "The employers are expected this kind of skills regardless of domain. They expect the graduates have these abilities." (P10). However, they underscored teacher candidates' struggle to meet these demands. P11 highlighted this challenge by stating, "… when they become teachers, start teaching, (and) then they suddenly have this demand of promoting the students' 21st-century skills, which they do not have much knowledge or skills. So, I think that is really an issue." Furthermore, they noted that collaboration is needed to meet these demands: "Recently, schools are very competitive places. … The job (teaching) is now far too difficult for us to do it individually. … The teacher has (to) be able to negotiate and (be) willing with the parents, collaborate with colleagues, get assistance from where they can." (P2). These perspectives underscored the urgency of equipping teacher candidates with the necessary skills, knowledge, and support systems to navigate the evolving educational landscape.

The participants' reflections also suggested that such a program is essential for personal growth to become more autonomous, flexible, satisfied, and influential teachers. For instance, P11 emphasized that teacher candidates will be more autonomous, beneficial, and happy since they achieve students' happiness with the program. Besides, teacher candidates can be empowered through "caring and sharing" (P12), which contributes to the community's progress "as being a G-7 country" (P1) and globalization because "The 21st century is like a mixed soccer team demanding global teachers." (P8). Moreover, they added that the skills are crucial to life: "If you do not have these (21st-century skills), you cannot survive as a teacher." (P2), "(They are essential) to succeed in different career(s)." (P10).

The Development Process of the Program

The participants' perspectives also uncovered the key aspects of the program development, including its design, implementation, evaluation, and improvement. Accordingly, the participants mentioned the program's structure, learning outputs, content, teaching and learning process, and assessment dimensions. They explained that the program should be interdisciplinary and multidimensional and should capture the link between objectives, teaching and learning methods, and assessment as in the following: "It should be multidimensional, it should be interdisciplinary and cooperating with some other teachers." (P12). P10 also added that the link between objectives, teaching, learning, method, and assessment could capture this program.

Regarding the program's intended outcomes, the participants emphasized the need to equip teacher candidates with a diverse range of competences, including digital, language, and learning-to-learn competences alongside thinking, transformative, interpersonal, problem-solving, research, and teaching skills. As P1 highlighted, "Especially since technology has become a necessity rather than an option, digital teaching, digital programs, (and) digital teaching materials will come into our lives more and more from now on. That is why teachers need to get stronger in these techno-pedagogical field competences." (P1). Beyond technical skills, they also pointed out the importance of inclusivity and respecting others: "So, they have to respect each other's background; they have to respect each other's diversity, choices, and it is really important that they are not going to you know classify the students and classify the other people based on what they do or how they do." (P12). Besides, they stated that the program should enhance a teacher identity (P5) by fostering cognitive and affective skills in a balanced way (P4). Furthermore, P2 mentioned a competency in legislation emphasizing the importance of accessing people in critical positions in the education system. Moreover, the program should promote capability awareness as highlighted by P12, "Personally, we pay too much attention to teaching teachers how to actually help students to recognize their own competencies, capabilities." Some participants also stressed the need for multiple literacy skills, including curriculum, digital, and media literacy: "A teacher should have curriculum development skills, that is, a teacher should know how to develop and implement the curriculum, and how to evaluate it." (P5) Lastly, they expressed that the program should encourage

flexible, entrepreneurial, innovative, and creative teacher development and broaden teacher candidates' perspectives, as stated by P2, "You have to open your mind. You (have to be) open to new ideas and new experiences. You have to travel. You have to get in touch with different people and become a much richer person."

The participants also emphasized that the program's content should encompass a balanced integration of critical thinking, communication, cooperation, and creativity skills -commonly known as 4Cs-alongside disciplinary and humanistic knowledge:

> One is, of course, foundational knowledge. … The second piece is what typically people talk about in terms of the 4Cs, creativity, collaboration, critical thinking, (and) those kinds of things. … I think a third component that is our framework is sort of what we call humanistic knowledge. So, these are the values and principles that we bring to work that we do. It would be things that facilitate, would be things around understanding of the global context within which we work, you know, and so the ethical and moral. (P9)

Moreover, the participants underlined that skills should be integrated based on the discipline rather than a separate course:

> 21st-century skills can be taught in every lesson. For example, critical thinking skills and creative thinking skills should not be isolated topics, but instead they should be fostered through creative assignments, though-provoking questions, activities, and assessments. This way, students are naturally encouraged to think critically and creatively. Over time, these skills become more than just academic—they evolve into a mindset, a way of viewing and interacting with the world. (P1)

For the program's teaching and learning process, the participants implied that the program should offer project-, problem-, practice-, inquiry, and discussion-based activities providing real-life situations:

> It is necessary to give them (teacher candidates) opportunities to put these skills to work, both based on the lessons and teaching practices. Maybe, it is necessary to create different environments in schools where they can put these skills to work, even at the university, if not at school. Otherwise, I think that if we put it in the lesson and leave it, we will not get results. (P4)

Besides, the participants emphasized collaborative activities, establishing cooperation between teacher candidates from different disciplines and individuals outside the university. They also recommended that the activities, including different digital tools, should be supportive, structured, and student-centered. Moreover, they underlined that the program should provide all these activities offering options and ranging in time. The participants also underlined that the program should offer formative assessments, including portfolios, feedback, and assignments with options, open tasks, and group work. For example, P10 remarked that peer feedback is fruitful for pre-service teachers. P9 emphasized performance-based assessment: "I always talk of performance as an understanding. So, what kinds of performances of understanding as a learner are you providing? You know, a test or a quiz is one kind of performance of understanding. …But I think that more attempted project-based, concrete projects that you create something is the way that all of these things get integrated."

The participants' experiences indicated some design principles and the steps to follow when designing the program. Firstly, they mentioned that considering every detail, re-questioning everything, and being aware of a long process with an evolutionary perspective are needed. For instance, P9 shared that they (educational designers) are attacking the problem at every level; they decorously reimagine and

re-question things while mentioning their design process. Similarly, P4 remarked on an evolutionary perspective needed in designing such a program:

> We (teacher education policymakers) tend to adopt a revolutionary approach, therefore, we propose a new program, a new thing, by destroying everything (and) ignoring past experiences. That is not appropriate for the program development process. I think that an evolutionary approach must be adopted in curriculum change instead. … It should be developed with a constant revision, I mean by renovating, monitoring, evaluating, revising (and then) going back to the starting point.

The participants' insights pointed to the necessity of a comprehensive and adaptable program that integrates multiple skills, aligns with cultural contexts, and bridges the gap between humans and technology. They also emphasized the importance of covering all learning domains, combining various skills within courses, and believing in the importance of the skills. As P12 pointed out, adapting the skills to the cultural context is crucial, "I think we use these skills, but we had to adapt them to our national context, the cultural context." Moreover, they stressed the significance of designing a well-structured program that balances theory with practice. P11 pointed to successful international examples by stating, "They (the countries with best practices) have very well-designed programs. So, I think in terms of the balance between theory and practice, they will be probably the best or maybe the ideal example." In this regard, P1 noted the importance of proper implementation by emphasizing the delivery of practicum and theory courses as required to maximize skill development. Additionally, P8 introduced the concept of connectivism in the program's design, highlighting the need to integrate human interactions with technological advancements: "We need to start with connectedness in the program model. … We need to connect humans to technology. We need to achieve this connectedness in designing (a) new program. This is called connectivism."

The participants also stated that a connection with K-12 education and a balance between the government's demands and students' needs should be established. Again, pointing to the successful international examples, P11 explained the importance of the balance between the demands and commitment to the achievement of the program: "There is some connection with this kind. They (the country with best practices) have in their national curriculum. … Managing that balance between those governments' needs and the teachers' all commitment to students think that will be important." (P11). They also remarked on a transparent and data-driven design process when designing the program: "(Once) It is (the design plan) shared with everybody. People get feedback. Then you move on" (P9), and "We were doing accompanying curricular research on pre-service teachers (at the same time) when we were developing the curriculum." (P12)

Furthermore, the participants also stressed the need for building a design team, needs analysis, vision and goal setting, creating debates, setting design principles and plans, defining outcomes and the core subjects, and piloting the program when designing the program. While P9 noted the importance of including the community in building a design team, others mentioned teachers, students, and auditors must also take place in the design team: "I think the first thing you really need to do is get community buy-in, I mean broader stakeholders. Everybody has to feel that they are part of the conversation, that this is not something that's being imposed on them." (P9) "The people with best practices on these (21st century) skills should have a role in this team. ... The teachers and administrators are critical at that school. I mean, they can define the problems best." (P3) The participants also added that a shared goal or vision should be set, and it might be achieved through creating debates: "Drawing different stakeholders' ideas about it and trying to deliberate and negotiate the different perspectives, different ideas, and come up with a certain agreement about what is really the direction that will be the plan for restructuring." (P11) "Design principles and plans should also be organized after setting the visions and goals." (P9)

Additionally, the participants highlighted defining learning outcomes with the core subjects and including the experiences in the design process: "I think basic program outcomes should be discussed at length. So, what qualifications should they be equipped with after four years?" (P1), "I would keep some of the core courses, not the same, but at least not content-wide the same but least focus the same." (P7), "They (teacher candidates) will try them on kids. Otherwise, you cannot develop those skills by saying, just 'giving here is this skill; here is that skill.'. They cannot be delivered theoretically." (P6) Lastly, P4 emphasized that piloting the program is necessary.

Regarding the practice and evaluation of the program, the participants underscored that more autonomy, good command of instruction, and an agreement for collaboration with practice schools are needed for the program implementation. "I want to be free to teach in my class the way I see fit, to place my own priorities in the courses, and teach the values that I believe important for the teachers." (P2) Also, stressing that program development is an ongoing process, they all highlighted the necessity of a constant evaluation process, periodic feedback, several meetings, and iterative revisions to ensure its effectiveness. P2 pointed out the dynamic process of program design by stating, "We make changes all the time, new ideas, new adoptions. So, it is an ongoing process." Similarly, P4 reinforced the importance of systematic revision cycles by asserting, "It needs to include cycles based on revisions. Without this process, personally I do not think that we can achieve it even if we build a good team and integrate the skills in the best way."

Management of the Program

The participants' insights also uncovered the management process for the program's sustainability, identifying key requirements at policy, faculty, and student levels. A recurring theme was the need for a systemic shift in understanding and implementation, particularly at the policy level, to ensure consistency and effectiveness across all levels of education. P2 described the challenge when facing outdated political structures by stating, "You have to battle with the education system of the ministry and the various old fashioned, I do not know, people who work there, that is the problem. They should develop as well." Similarly, P3 emphasized the limiting effects of standardized assessments, noting, "Naturally, students think that they will pass the classes by taking exams. Or a test called PPSE (Public Personnel Selection Exam) ahead. I mean, what does PPSE measure? So they just focus on them." Beyond policy constraints, the participants' reflections entailed the importance of a change in ethical and moral understanding to manage the program effectively. P1 pointed out, "We have serious problems related to values, ethics, (and) work discipline as a country now. We have conflicts, lows, and highs." Meanwhile, P9 emphasized that strong educational leadership is crucial for fostering an environment where teacher candidates feel empowered to experiment, innovate, and engage deeply in learning: "It is only educational leaders who can create those spaces where teachers can feel free to play and to try different things, possibly fail once in a while, but also engage their learners in a much better way." Acknowledging the complex and gradual nature of systemic change, participants recognized that transforming teacher education is a long-term process. P9 illustrated this reality by stating, "Can we declare victory? No way. Never. … I see us doing this work for the next ten years. ... So, I think we are at an early stage of a very complex process."

Another key concern raised by the participants is the need for improvements at school levels, particularly in terms of physical infrastructure, institutional support, and alignment with K-12 curricula to ensure the program's management. P9 highlighted the structural challenge of the schools, stating:

I think the biggest constraint is the structure of school(s) that we have. And that's sort of a lot of my work now is asking how that structure can be changed. Like, can we think of space differently? Can we think of the kind of pedagogical approaches that we have differently? Can we think of teacher training differently? But none of that is going to occur until we reimagine what redesign how schools work. Like, how schools are set up. Right? I think that is the biggest constraint in the space.

On the other hand, P2 pointed to the disconnection between pre-service teacher education programs and real-world school environments: "Then the problem is when they (teacher candidates) go to school, and they find a different world. And the teachers tell them, 'Do not listen to the university, the real world is not like that.' That is our biggest task." Additionally, the participants stressed that 21st-century skills should not be limited to higher education. However, they should be integrated into K-12 curricula to create a more seamless learning progression: "So, if they expect these skills to be part of the academic preparation and not only academic, we can talk about this also in the pre-university curriculum." (P10). Moreover, the participants emphasized the importance of system-wide consistency and long-term vision in managing the program:

> *I would say cohesion. ... I mean, these factors involved in deciding how the teacher training is going to be. To look for everything not to change every year (but) just to have a vision and stick with this and support. (P10)*

At the faculty level, the participants noted that teacher educators need time and freedom of speech to ensure the program's management and sustainability. They raised concerns about the limited opportunities for teacher educators to engage in discussions and shape the future of teacher education. As P7 noted, "Teacher educators together are discussing and sharing with each other how they see the future of teachers and teacher education. ... So, they need to have time and maybe also help to develop ownership about that." Furthermore, participants stressed the importance of freedom of speech and greater involvement in policy decisions, arguing that faculty members should have a voice in shaping teacher education policies. P2 expressed this concern, stating, "I need to be heard by the policymakers. I need to be able to express myself freely outside the university." The participants also explained that collaboration with change agents, other scholars, and ownership are required for the management of the program. P10 emphasized the value of collective efforts, stating, "We are facing similar problems, similar challenges. And if we get united or help each other, maybe that will ease our work." The need for trust and institutional support was also underscored, with P3 asserting, "We will trust in academics. We do not have any other option." Similarly, P9 highlighted the importance of resilience in the face of setbacks, stating, "We just pick ourselves up, and we move on, and we hope we learn something from it. You know, every move." Moreover, stronger communication among faculty members was recognized as critical in fostering a collaborative and forward-thinking academic environment. P10 reflected on this need, stating, "Sometimes we do not speak enough with one another about this. This level of communication between us I think it is very important."

Finally, the participants remarked on the needed infrastructure at the faculty level through resources, classroom sizes, and educational environment: "Maybe a common database with such kinds of resources, tips, or things like these would help teacher educators not to feel alone or isolated in their world." (P10). The participants also articulated the need to raise teacher educators' qualities, underscoring the importance of mindset:

> *Let us say we have achieved the integration of 21st-century skills into all pre-service teacher education programs. This does not assure teacher candidates' skills development because curriculum development is a multidimensional process. Teacher educators should also need some education, and their mindset in teaching should change. (P4)*

Additionally, the participants emphasized that the professional development activities for teacher educators should be continuous and include both top-down and bottom-up approaches, as illustrated by P7: "There needs to be a combination (of top-down with bottom-up approaches)." Furthermore, they advocated for the recruitment of experienced teacher educators, including senior and retired teachers, to strengthen faculty expertise:

I think the qualities of that stuff should be first and foremost… I believe that senior or retired teachers could also be highly beneficial. In fact, a dedicated faculty position could be created for them. This was something I saw in the U.S., for example. They called it "adjunct professor," referring to professionals who have extensive experience in the field or industry. (P1)

Finally, the participants noted that student preparedness also plays a crucial role in the success of teacher education programs. They stressed the need for teacher candidates to be open to innovation and equipped with digital competencies. P7 remarked on this challenge, stating, "On the side of students, there needs to be some kind of openness to innovation. … They are hesitant to start new things."

Metaphors Depicting the Program

The participants used metaphors to describe pre-service teacher education programs integrated with 21st-century skills, each reflecting a different perspective on the process and its impact. While not all participants articulated metaphors, those who did offer vivid and thought-provoking imagery that sheds light on the complexity and transformative potential of such a program. The metaphors - battle, blooming flower, powerful guidance, water, and walnut - convey insightful interpretations of the challenges, opportunities, and transformative potential of such a program.

The program as a battle

P2 employed the metaphor of battle to illustrate the struggles and challenges involved in implementing and sustaining the program. Also, the sharp tone in her voice when describing the program might be the reflection of her struggles: "Everybody is well, theoretically, so keen on this philosophy of sharing and collaboration and this and that. But this contradicts producing a perfect team. … So, it is a constant battle … sometimes we win, sometimes we lose."

The program as a blooming flower

Conversely, P11 described the program as a blooming flower, symbolizing personal and professional growth:

To me, the ideal way would be seen like a blooming flower so every student-teacher can follow their own path to bloom their own flower. You know they have their own strengths and own interests as well. And the teacher education really can provide some kind of opportunities to really boost this and let them grow as a teacher who can make (a) good impact on their students.

This metaphor can be interpreted as teacher candidates' self-actualization as it assists them in uncovering their potential, ultimately enabling them to positively impact the educational environment.

The program as powerful guidance

P1 used the powerful guidance metaphor to highlight the program's role in empowering future teachers: "The program reminds me of setting off with more powerful, more qualified guidance. Like, I imagine a teacher candidate empowered in all terms." This perspective positions the program as a guiding force that strengthens teacher candidates, equipping them with essential skills and confidence.

The program as water

P5 described the program as water, emphasizing its infinite nature, continuous learning process, and essential role in lifelong education:

It feels like infinity, like continuous learning. I can describe it as lifelong learning, especially because 21st-century learning skills play a crucial role in this ongoing process, enabling

individuals to become active members of society. I could also compare it to a resource—a single term that encapsulates access to everything, an integrated source of knowledge. Or perhaps I could call it water—because water is life.

This metaphor illustrates that the processes of learning, teaching, and feedback form a continuous, dynamic cycle, and the program as water is at the center nourishing the growth of teacher candidates and teacher educators.

The program as walnut

Finally, by emphasizing the right time in 21st-century skill development, P6 described the program as if hulling a walnut:

(The program is) like a walnut. It is tough to crack the shell. When you manage it, you may encounter worms or an infected walnut. You may have been too late for everything. However, when it is not infected, that is priceless. … Walnut fresh from the tree. It can stain your hands when you do not hull it correctly. That is why, you need to know how to hull, how to eat, or how to crack it. Otherwise, you mess up.

This metaphor suggests that gaining 21st-century skills requires careful planning and timely intervention. Otherwise, unintended results can be obtained. Therefore, timing and careful planning in skill acquisition should be approached with precision, much like cracking a walnut at the right time - if done too late, the opportunity may be lost, and if done incorrectly, the process may become messy or ineffective.

In sum, the water metaphor refers to the vitality of 21st-century skills and the program, emphasizing their essential role in sustainable educational growth. In contrast, the battle and walnut metaphors indicate the difficulties and careful planning involved in the integration process, underscoring the need for resilience and strategic preparation. Meanwhile, the blooming flower and powerful guidance metaphors demonstrate the program's ultimate goal -empowerment and meaningful transformation- when it is achieved. Collectively, these metaphors illustrate the multifaceted nature of integrating 21st-century skills into pre-service teacher education, acknowledging both the obstacles and the transformative potential such a program holds when effectively designed and implemented.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

The participants' experiences showed that the pre-service teacher education program integrated with 21st-century skills is needed in all contexts. All the participants from different countries surprisingly emphasized that the current pre-service teacher education programs are inadequate for developing the skills. Similarly, the literature argues the translations of policy initiatives and statements to educate students for the 21st century into today's classrooms (e.g., Lamb et al., 2017; Tan et al., 2017). In parallel with this argument, the study uncovered that the current teacher education programs from developing to developed countries could not achieve students operating in the 21st century. These findings are further supported by a recent meta-analysis of 32 research articles (Kausar & Ajmal, 2024), which underscores the widespread inadequacy of current teacher education programs in fostering 21st-century skills. Similarly, a systematic review of 55 studies has found that existing teacher education programs have limited actionable strategies for teaching 21st-century skills (Almazroa & Alotaibi, 2023). Research conducted in OECD countries also indicates that, although 21st-century skills are addressed in national curricula, there are minimal or no clear guidelines on how to teach them effectively (Ananiadou & Claro, 2009). Therefore, teacher education should be reconceptualized as a moral and intellectual activity rather than a form of technical rationality (Tan, 2019), as this study pinpointed the dominance of traditional teaching approaches. Nevertheless, the 21st century is demanding, considering

technological advancements, globalization, a multicultural society, and a knowledge-based economy (Maphosa & Mashau, 2014). As the study depicted, today's teachers should be equipped with various skills to meet these demands.

With a multidimensional understanding, the participants suggested that these skills should be integrated within the program rather than proposing a separate course parallel with other studies (Domine, 2011; Gut, 2011). By synthesizing and integrating the skills, the program should be based on different skills and higher-order thinking (Häkkinen et al., 2016) and the profiles of the pre-service teachers (Cretu, 2017; Greenhill, 2010). Hence, by tailoring to the students' varying needs, abilities, and learning preferences (Tan, 2019), the program should include a well-organization of skills, knowledge, and values (Maphosa & Mashau, 2014; Tan, 2019) and case-based teaching methods (Dwikristanto & Khaerudin, 2024). Furthermore, the participants indicated that the program should provide learning experiences encouraging collaboration, communication, options, and digital tools. Through both on-campus and off-campus experiences, the engagement of teacher candidates in the skills should be enhanced.

Besides, the participants emphasized including the community in the design process of the program. Similarly, Hammerness et al. (2005) note that creating a coherent program with only faculty members having no practice experience is complicated. Moreover, a qualified collaboration between stakeholders will positively affect designing the program based on 21st-century skills (Adeosun, 2014; Ferreira et al., 2024; Shidler, 2024). Nevertheless, collaboration and autonomy are critical in the program's implementation since teacher educators need autonomy rather than being told what to do in classes (Aslan, 2015). For the evaluation of the program, the study revealed that teacher educators should constantly revise and renew curricula through cooperation and communication by following advancements.

Despite the participants' experiences in different contexts, the management of the integration process requires intellectual and practical recasts at policy, faculty, school, and society levels jointly, as in the P21's (2019) study. Gordon et al. (2009) also recommend "maximize the coherence and synergy between the national formulation of key competence strategies, and more local implementation choices" (p. 236), and agencies and teacher educators should be dynamic associates in the policies for pre-service teacher education. Hence, instead of the only "heroic" (Lamb et al., 2017, p. 46) stakeholders, all the stakeholders should collaborate in curricular events for the integration process with a shared paradigm and innovative mindset.

Adeosun (2014) states that collaborative and communicative studies of teacher educators for integrating 21st-century skills are essential, as the participants claimed collaborative leadership at the faculty level. In a collaborative management context, policymakers' decisions, with the participation of others, facilitate integration initiations at the faculties. Teaching-focused personal and social networks improve 21st-century skills at the faculty level (Benbow et al., 2021). As the participants said, K-12 schools practicing 21st-century skills with the proper physical structure and curricula offer teacher candidates the opportunity to experience these skills. To apply holistic understanding in integrating the skills (Maphosa & Mashau, 2014), faculty members and K-12 workers should study cooperatively. An advanced society in all areas offers cultural support for integrating these skills in school and teacher education programs.

The participants remarked on teacher educators' need for professional development in the integration of 21st-century skills, as Gordon et al. (2009) emphasize the importance of training teacher educators. Similarly, Bozkurt (2021) revealed that the inefficacy of teacher educators hinders teacher candidates' ability to achieve 21st-century skills. Competencies such as creativity, technology, and cultural awareness can be new for teacher educators; therefore, teacher educators are required to be competent learners and users.

In fact, it was understood that the freedom of the stakeholders is a critical component of the teacher education program, as in some studies (Aslan, 2015; Cretu, 2017; Greenhill, 2010). Teacher educators demand to be free for curricular decisions compatible with the primary skills in the 21st century, such as creativity, critical thinking, and metacognition (Lamb et al., 2017; P21, 2019). Consequently, teacher educators and teacher candidates prefer to work with managers who are collaborators but not authorities.

Producing a metaphor for a teacher education program integrated with 21st-century skills was challenging for the participants. However, they explained the requirement of such a program with the metaphor of water, like the survival skills metaphor of Saavedra and Opfer (2012). The metaphor blooming flower means teacher candidates' self-actualization, which can be related to another metaphor, powerful guidance. The metaphors battle and walnut show that the participants perceive the integration as a painful process as the competence of perseverance described by Lamb et al. (2017). In sum, they believe that 21st-century skills are vital in many ways.

Limitations and Implications

While this study provides valuable insights into integrating 21st-century skills into pre-service teacher education, it has some limitations. First, the sample size is relatively small, comprising only 12 teacher educators from seven countries, which may not fully capture the diversity of experiences across different educational contexts. Second, the study only relies on self-reported data from semi-structured interviews, which are inherently subjective and may have been influenced by participants' personal biases. Also, the study did not employ other data collection tools to provide and triangulate a more comprehensive understanding of pre-service teacher education with 21st-century skills. Additionally, since data collection occurred during the COVID-19 pandemic, external factors such as remote teaching challenges may have influenced the participants' responses. Therefore, further studies are recommended to address these limitations by employing a mixed-methods approach, including larger and more diverse participant samples, as well as observational and longitudinal data collection.

From teacher educators' experience and perceptions, this study uncovered notable findings about a pre-service teacher education program integrated with 21st-century skills. First, the current programs are inadequate in preparing teachers to meet the demands of the 21st century, whatever the country's context is; therefore, it is vital to integrate the skills to achieve multiple literacy and capabilities into the programs with a good change policy and collaboration. However, for the integration to be successful, it must be well-organized, balanced, and systematically designed. A clear change policy and collaboration across stakeholders are also vital. To design such programs, the following practical steps are recommended:

- Establish a multi-stakeholder design team including teacher educators, policymakers, curriculum developers, and in-service teachers.
- Conduct a needs analysis that incorporates feedback from schools and communities to ensure contextual relevance.
- Apply backward design principles, setting clear learning outcomes aligned with 21st-century competencies such as collaboration, creativity, critical thinking, and digital literacy.
- Build curricular flexibility to adapt to future needs and technological advancements.
- Provide collaborative and inquiry-based learning opportunities, both on-campus and in real-world, off-campus settings, to allow teacher candidates to meaningfully practice these skills.

Furthermore, the study displayed that the program's success depends on the policy, faculty, and student-level requirements. Accordingly, a change in understanding and infrastructure is needed at the policy level. National and institutional frameworks that mandate the integration of 21st-century skills across teacher education curricula could be developed. This might include aligning ministries, accreditation bodies, and universities to support systemic change and investing in digital infrastructure to promote innovation in teaching and learning. Additionally, at the faculty level, the study indicated that teacher educators need time, freedom, collaboration, training, and resources, so, ongoing professional development for teacher educators on innovative pedagogies, digital tools, and inclusive practices should be provided. Also, institutions should provide time and space for collaboration, reflection, and co-creation among faculty members, enabling sustained program improvement. On the other hand, fostering an innovative mindset and effectively applying

digital skills are essential requirements for student-teachers at the individual level. This can be achieved through scaffolded learning experiences such as micro-teaching, internships, and collaborative projects. Additionally, digital skills training should be integrated into both coursework and practicum components.

For the evaluation of the program, formative assessment tools should be implemented to to evaluate both skill acquisition and program effectiveness throughout the teacher education journey. Additionally, feedback loops from graduates, mentors, and partner schools could be used to continuously revise and improve the program. Lastly, teacher educators' perceptions depicted the program's vitality and difficulty with metaphors. These metaphors can be used as reflective tools in professional development sessions to deepen faculty understanding of the emotional and practical dimensions of change.

Consequently, this program requires significant effort and collaboration from various stakeholders. However, the end result will be fruitful as it might prepare teachers to meet the demands of the 21st century. Apart from the implications for the program mentioned above, this study can offer further studies on the design, evaluation, and implementation process of the program by using the study's findings. The results might be argued with teacher educators from different contexts so that a shared paradigm for designing such a program could be developed.

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Examination of the Relationships between Happiness, Self-Compassion, and Personality Traits in Young Adults

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ABSTRACT

The aim of this research is to explore the relationships between happiness, self-compassion, and personality traits in young adults. A correlational model was used for this study, which involved a sample of 400 volunteer participants. The data were collected using the Personal Information Form, the Adjective-Based Personality Scale, the Oxford Happiness Questionnaire, and the Self-Compassion Scale. SPSS software was employed to analyze the descriptive statistics, correlation values, and predictive values. The results indicated significant relationships between happiness, personality traits, and self-compassion. Specifically, extraversion, agreeableness, conscientiousness, openness, and self-compassion showed positive correlations with happiness, whereas neuroticism showed a negative correlation. Additionally, extraversion and neuroticism, key dimensions of the five-factor model of personality, along with self-compassion, were found to be significant predictors of happiness scores. The findings suggest that promoting traits like extraversion and self-compassion may be effective strategies for enhancing happiness in young adults. The study is limited to young adults, which may affect generalizability. Future research could include different age groups and use varied research methods to gain broader insights. Suggestions for future research were also discussed.

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INTRODUCTION

Personality refers to the consistent patterns of behavior that influence how individuals think, feel, and act (Burger, 2016). According to Gerrig and Zimbardo (2014), personality is a complex set of psychological traits that shape an individual's distinctive patterns of behavior across different situations and over time. Personality traits are stable and ingrained tendencies to respond in specific ways, encompassing individuals' consistent patterns of behavior, emotion, and thought (Chidester et al., 1991; Parks-Leduc et al., 2015)

Various studies have been conducted by numerous researchers to identify and define the fundamental dimensions of personality (Allport & Odbert, 1936; Cattell, 1943; Eysenck, 1983). These studies have provided evidence for five dimensions of personality based on diverse personality data. These five dimensions are referred to as the "Big Five" because they consistently emerge across studies employing various methods (Burger, 2016). Each of the five factors encompasses a specific set of characteristics and has been observed across many different cultures. This supports the notion that the five factors represent fundamental aspects of human nature and are universal (Costa & McCrae, 1992a; Costa & McCrae, 1992b). The Big Five consists of extraversion, conscientiousness, openness to experience, neuroticism, and agreeableness (Costa & McCrae, 1986).

Extraversion refers to an individual's level of engagement with their environment. It is characterized by traits such as sincerity, sociability, assertiveness, activity, thrill-seeking, and positive emotions. Extraverted individuals approach life with energy, enthusiasm, joy, and confidence. They experience pleasure from social interactions and exhibit confidence in their engagements. They are not inclined to avoid being the center of attention. In contrast, introverts often exhibit a lack of the energy, enthusiasm, and confidence. They tend to be more reserved and socially distant, and may experience reluctance to actively engage with their environment (McCrae & Costa, 1985; Watson et al., 1994). The conscientiousness dimension, on the other hand, reflects the degree of control and discipline an individual possesses (Burger, 2016). Individuals with high levels of conscientiousness are typically more organized, goal-oriented, punctual, reliable, diligent, and careful, while those with lower levels of conscientiousness are generally perceived as careless, irresponsible, reluctant to work purposefully, and disorganized (Bruck & Allen, 2003; Gerrig & Zimbardo, 2014). Costa et al. (1991) noted that high levels of conscientiousness encompass both activating and inhibiting aspects. The activating aspect is manifested in achievement drive and commitment to work, whereas the inhibiting aspect is reflected in meticulousness and precaution. Another personality dimension is openness to experience. Openness to experience refers to the tendency to engage in intellectual activities and seek out new experiences. Individuals high in openness are typically characterized by an interest in and curiosity about intellectual issues, a vivid imagination, a preference for novelty, and the ability to generate innovative ideas and concepts. In contrast, individuals low in openness are generally characterized by a preference for familiarity over novelty and a resistance to change (Chamorro-Premuzic & Ahmetoglu, 2012; Williamson, 2018). Neuroticism, defined as a tendency toward emotional instability (Bacanlı et al., 2009), is the fourth personality dimension. It refers to the predisposition to experience negative emotions such as guilt, fear, irritability, and sadness (Basım et al., 2009). Individuals with high levels of neuroticism are more prone to emotional instability and are more likely to experience emotions such as anxiety, fear, sadness, anger, and shame. These individuals often struggle with impulse control and coping with stress. In contrast, individuals with low levels of neuroticism tend to exhibit more emotionally balanced, calm, and composed behaviors. They are generally more effective at coping with stressful situations (Bruck & Allen, 2003). The final dimension of the Big Five is agreeableness, which relates to interpersonal relationships (Graziano & Tobin, 2002). According to Costa et al. (1991), agreeableness influences self-image and plays a role in shaping social attitudes and life philosophy. Agreeableness encompasses characteristics such as trust, honesty, altruism, harmony, modesty, and mildness. Individuals with high levels of agreeableness are generally affectionate, friendly, warm, and tolerant. In contrast, individuals

with low levels of agreeableness are often characterized as self-centered, competitive, irritable, and suspicious (Bruck & Allen, 2003; Chamorro-Premuzic & Ahmetoglu, 2012).

Personality traits are important factors influencing individuals' preferences, interests, decisions, and behaviors (Golbeck & Norris, 2013; Nunes & Hu, 2012). In this context, it is believed that personality traits may also affect individuals' levels of happiness. A review of the literature reveals studies indicating significant relationships between personality traits and happiness levels (Juang et al., 2021; Koydemir et al., 2014; Milić et al., 2019; Pishva et al., 2011; Ziapour et al., 2018).

Happiness is a concept that has attracted attention and contemplation from past to present (Tov & Diener, 2009; Yıldırım & Arslan, 2021). The desire to be happy is a universal aspiration, present in individuals of all ages, cultures, experiences, and genders (Nelson & Lyubomirsky, 2014). People strive to shape their lives in ways that bring them happiness (Veenhoven, 1994). Goals such as health, beauty, wealth, and power acquire significance because individuals believe they contribute to their happiness (Csikszentmihalyi, 2008). Veenhoven (2000) proposed that happiness can be examined both objectively and subjectively. Objectively happiness is defined as living in favorable conditions, such as economic prosperity, peace, and freedom. Subjectively happiness is defined as the extent to which an individual positively evaluates their life as a whole and enjoys the life they lead.

In general, the concept of happiness is analyzed in two dimensions: hedonic and eudaimonic (Keçeci, 2020). Hedonic happiness refers to the pleasure an individual experiences, while eudaimonic happiness involves the alignment of the individual with their authentic self (Watkins, 2015). In the hedonic happiness, the focus is on living a life that maximizes pleasure and minimizes pain (Bergsma, 2008). According to this perspective, the happiness derived from overall life satisfaction constitutes the quality of life (Veenhoven, 2003). On the other hand, eudaimonic happiness is defined as the happiness an individual achieves when they realize their full potential (Watkins, 2015). The ultimate life goal, in this context, is recognized as living a virtuous life (Vella-Brodrick, 2016).

In the study conducted by Lyubomirsky et al. (2005), it was revealed that the happiness levels of individuals consist of three basic factors: genetics, living conditions, and activities aimed at promoting happiness. Additionally, the researchers found that genetics account for 50% of happiness, living conditions for 10%, and activities aimed at increasing happiness for 40%. In this context, it can be argued that happiness can be influenced by individual behaviors (Veenhoven, 1994).

Happiness is a positive psychological state characterized by high levels of positive affect and low levels of negative affect (Carr, 2016). Upon reviewing the literature, studies examining concepts within the scope of positive psychology, such as forgiveness (Adam-Karduz & Sarıçam, 2018; García-Vázquez et al., 2020), perceived social support (Ahmed & Mohamed, 2022; To et al., 2022), and hope (Satıcı et al., 2023; Witvliet et al., 2019), which are associated with happiness levels, are particularly notable. Another concept associated with happiness is self-compassion (Wollast et al., 2019).

The concept of self-compassion is closely linked to the broader definition of compassion (Neff, 2003a). Compassion refers to selfless behaviors aimed at helping others (Wispe, 1991). When individuals express compassion toward others, they may develop a sense of empathy for them. In such instances, compassion involves a non-judgmental, open-minded response to others' mistakes, rather than harsh criticism or judgment (Neff et al., 2005). Compassion can also be directed toward oneself, especially when an individual experiences pain or sadness as a result of life events beyond their control (Neff, 2011b). This self-directed form of compassion is referred to as self-compassion.

Self-compassion, which has its roots in Buddhist philosophy (Neff, 2004), can be defined as an individual's ability to recognize and accept their own pain through the use of metacognitive strategies, while remaining open to it and demonstrating self-tolerance (Neff, 2003a; Neff, 2003b). Self-compassion involves the cultivation of new positive emotions by embracing negative emotions, rather than attempting

to replace them with positive ones (Neff, 2011a). Individuals with high self-compassion are more likely to feel relaxed, happy, optimistic, and satisfied, experience lower levels of anxiety and depression when faced with negative life events, and exhibit greater self-tolerance (Allen & Leary, 2010; Neff, 2011a).

Neff (2022) examined the concept of self-compassion through three sub-dimensions: self-kindness, common humanity, and mindfulness. These three dimensions interact and influence each other (Neff, 2003b). Self-kindness can be defined as the opposite of self-judgment. It refers to being tolerant and understanding toward oneself, rather than engaging in harsh self-criticism or judgment when confronted with a painful situation or failure. The second dimension is common humanity. When individuals experience a negative life event, they often believe they are the only ones experiencing such a situation and feel ashamed of being responsible for the event. Common humanity allows individuals to recognize that such experiences are shared by all people, thus alleviating feelings of loneliness and isolation. Mindfulness is the ability to hold and accept one's painful thoughts and feelings with balanced awareness, rather than over-identifying with them (Germer, 2009; Neff, 2003a). In other words, it refers to the individual's ability to observe what is happening in the present moment and face the facts by accepting them without judgment (Neff, 2022).

Positive psychology, which encompasses concepts such as happiness and self-compassion, is increasingly gaining prominence in the literature (Wang et al., 2023). With the growing interest in positive psychology, research on happiness and self-compassion has also increased. However, upon reviewing the literature, no study has been identified that concurrently examines happiness, self-compassion, and personality traits. Furthermore, it is believed that examining whether personality traits and levels of self-compassion influence happiness would be significant both theoretically and for practical applications. This study is expected to contribute to the literature and provide insight for future research. In this context, the aim of the study is to explore the relationship between personality traits, happiness, and self-compassion levels. To achieve this goal, the following key research questions were investigated:

1. Is there a significant difference in the happiness levels of young adults based on gender?
2. Is there a significant relationship between personality traits, self-compassion, and happiness levels among young adults?
3. Do personality traits and self-compassion levels significantly predict the happiness levels of young adults?

METHOD

Research Design

This study aims to explore the relationship between personality traits, happiness, and self-compassion levels. To achieve this, a relational model was employed. The relational model is a type of research in which the relationships between two or more variables are examined without any intervention in these variables (Büyüköztürk et al., 2020).

Study Group

Descriptive statistics for the study are presented in Table 1.

Table 1. *Descriptive statistics*

Variable	N	%	Mean	SD
Total	400	100		
Female	310	77.5		
Male	90	22.5		
Age (years)			24.07	3.85

The study group consisted of 400 participants, including 310 females (77.5%) and 90 males (22.5%), aged between 18 and 35 years. The mean age of the participants was 24.07 years, with a standard deviation of 3.85.

Research Instruments

Oxford Happiness Questionnaire - Short Form

Oxford Happiness Questionnaire - Short Form, developed by Hills and Argyle (2002), is an 8-item scale designed to assess levels of happiness. The scale was adapted into Turkish by Doğan and Akıncı-Çötok (2011). Initially, the scale was translated from its original form into Turkish, and linguistic equivalence was evaluated using the back-translation method. Subsequently, item analysis was conducted to determine whether the scale items adequately represented the construct. As a result of this analysis, the item-total correlation of the 4th item was found to be below .30 (.17), leading to its removal from the scale. In the adaptation study, the Cronbach's alpha coefficient was reported as α = .74. Exploratory and confirmatory factor analyses indicated that, similar to the original version, the Turkish scale retained a single-factor structure. The adapted scale is a self-report instrument consisting of 7 items (e.g. "I am quite satisfied with everything in my life."), with responses scored on a 5-point Likert scale ranging from 1 (I completely disagree) to 5 (I completely agree). The scale includes two reverse-coded items (e.g. “I do not have happy memories related to my past.”). In the present study, the Cronbach's alpha coefficient was α = .70.

Self-Compassion Scale

Self-Compassion Scale, developed by Neff (2003b) to assess individuals’ levels of self-compassion, was adapted into Turkish by Deniz et al. (2008). The original scale consists of 26 items distributed across six sub-dimensions. Participants rate each item on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). During the adaptation process, exploratory and confirmatory factor analyses revealed that the Turkish version of the scale exhibited a single-factor structure. Furthermore, two items with item-total correlations below .30 were removed. The adapted scale is a self-report instrument comprising 24 items (e.g., "I try to be understanding and patient toward the aspects of my personality that I dislike."). The Cronbach's alpha coefficient for the scale was reported as α = .89, and the test-retest reliability was .83. Possible total scores range from 24 to 120, with 11 items reverse-coded (e.g., "When I feel bad, I tend to dwell on everything that is negative."). In the present study, the Cronbach's alpha coefficient was found to be α = .92.

Adjective-Based Personality Test

Adjective-Based Personality Test was developed by Bacanlı et al. (2009) based on the five-factor personality theory to determine individuals' personality traits. The scale features a two-tailed design, utilizing adjective pairs corresponding to the factors in the five-factor model (e.g. Optimistic-Pessimistic, Unmotivated-Motivated, Selfish-Altruistic). It consists of 40 items that measure the dimensions of Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness, in line with the five-factor personality theory. The Cronbach's alpha coefficients for the relevant sub-dimensions are α = .73, α = .89, α = .80, α = .87, and α = .88, respectively. In this study, the Cronbach's alpha coefficients were found to be α = .68, α = .88, α = .77, α = .81, and α = .81, respectively.

Personal Information Form

The Personal Information Form was developed by the researchers to collect gender and age data.

Data Collection and Analysis

The data of the study were collected online via Google Forms, with 415 participants responding to the survey. However, since the study focused on young adults, the responses of 15 individuals who were outside

the 18-35 age range were excluded from the dataset, and the analysis proceeded with the remaining data. The dataset did not contain any missing data. Prior to analysis, the normality of the data distribution was assessed. For this purpose, the skewness and kurtosis values of the scores obtained from the scales were analyzed. A skewness and kurtosis range between -1.5 and +1.5 indicates that the data follows a normal distribution (Tabachnick & Fidell, 2001). The results of the analysis are presented in Table 2. As shown in Table 2, the skewness and kurtosis coefficients for each scale and sub-dimension fall within the -1.5 to +1.5 range. Based on these results, parametric tests were deemed appropriate for the data.

Table 2. *Skewness and kurtosis values*

Scale	Sub-dimension	Skewness	Kurtosis
Personality traits	Extraversion	-.360 (SH=.122)	-.180(SE=.243)
	Agreeableness	-.644(SH=.122)	.459(SE=.243)
	Conscientiousness	-.705(SH=.122)	.669(SE=.243)
	Openness to Experience	-.709(SH=.122)	.812(SE=.243)
	Neuroticism	.193(SH=.122)	.084(SE=.243)
Self-compassion		-.304(SH=.122)	.247(SE=.243)
Happiness		-.423(SH=.122)	.393(SE=.243)

Data were analyzed using the SPSS program with independent samples t-test, Pearson correlation coefficient, and multiple linear regression analysis.

Ethic

The ethics approval for the study was obtained from the Social and Human Sciences Research and Publication Ethics Committee of Karamanoğlu Mehmetbey University, on 20.02.2024, with the approval number 04-2024/82.

FINDINGS

This section includes t-tests for gender, correlations examining the relationships between variables, and multiple regression analysis.

Table 3. *T-test results for gender*

	Gender	N	X̄	SS	sd	t	p
Happiness	Female	310	23.36	4.77	398	1.39	.16
	Male	90	22.57	4.74			

p<.05*, p<.01**

The data presented in the Table 3 indicate that there is no statistically significant difference in the mean happiness scores between male and female young adults.

Table 4. *Correlation coefficients for variables*

	1	2	3	4	5	6	7
1.Happiness	1						
2.Self-compassion	.61**	1					
3.Extraversion	.44**	.34**	1				
4.Agreeableness	.30**	.26**	.36**	1			
5.Conscientiousness	.30**	.21**	.51**	.42**	1		
6.Openness to Experience	.33**	.32**	.67**	.48**	.51**	1	
7.Neuroticism	-.42**	-.51**	-.18**	-.24**	-.15**	-.12*	1

Table 4 shows a significant positive correlation between happiness scores and self-compassion scores ($r = .61$, $p < .01$), indicating that higher levels of self-compassion are strongly associated with greater happiness. Furthermore, positive correlations were found between happiness scores and several subdimensions of personality traits, namely extraversion ($r = .44$, $p < .01$), agreeableness ($r = .30$, $p < .01$), conscientiousness (r

= .30, p < .01), and openness to experience (r = .33, p < .01). These findings suggest that individuals who score higher on these traits tend to report higher levels of happiness. Conversely, a significant negative correlation was observed between happiness and neuroticism (r = -.42, p < .01), implying that individuals with higher levels of neuroticism tend to experience lower happiness. Overall, these results highlight the complex and multifaceted relationships between personality dimensions, self-compassion, and happiness.

Table 5. *Results of multiple regression analysis for predicting the level of happiness*

Variables	B	SE	β	t	p	Bivariate R	Partial R
Constant	10,739	1,633		6.57	.000		
Self-compassion	.132	.013	.452	9.95	.000	.614	.448
Extraversion	.125	.019	.260	6.58	.000	.440	.314
Neuroticism	-.104	.032	-.144	-3.31	.001	-.427	-.164
R= 0.673		R^2= 0.453					
F(3,396)=109.50		p< .05					

Happiness=10.739+0.132.(Self-compassion) +0.125.(Extraversion) -0.104.(Neuroticism)

Since the subdimensions of personality traits, namely agreeableness, conscientiousness, and openness to experience, were not found to be significant predictors in the initially constructed regression model, the analysis was repeated with a revised model excluding these variables. The results of this revised analysis are presented in Table 5. Upon examining Table 5, it is observed that the newly constructed regression model is statistically significant, indicating a meaningful relationship between the included predictors and happiness levels. Self-compassion, together with the personality traits of extraversion and neuroticism, accounts for approximately 45% (R^2 = .45) of the variance in happiness among the participants. This highlights the considerable explanatory power of these variables in predicting happiness.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

The aim of this study is to reveal the predictive relationships between personality traits, self-compassion, and happiness levels in young adults. Upon examining the obtained findings, it was observed that there was no significant difference in happiness levels based on the gender variable. Zweig (2015) analyzed the results of a survey conducted by the Gallup World Poll and explored the relationship between happiness and gender in 73 countries. As a result of this analysis, it was concluded that either women were happier than men or there was no significant difference between the two genders. When examining relational studies in the literature, research conducted by Cihangir-Çankaya and Meydan (2018), Ekinci and Hamarta (2020), and Kim et al. (2020) found no significant gender differences in happiness levels. However, studies conducted by Salavera & Usan (2021) and Yang et al. (2024) found significant results in favor of women.

Another result of the study is the presence of a significant relationship between young adults' personality traits, self- compassion, and happiness levels. A significant positive relationship was found between happiness and self-compassion, as well as between happiness and the subdimensions of personality traits such as extraversion, agreeableness, conscientiousness, and openness to experience. A significant negative relationship was observed with neuroticism. Similar findings have been observed in previous studies, where positive relationships were found between happiness and extraversion, agreeableness, conscientiousness, and openness to experience, whereas a negative relationship was found with neuroticism (Aziz et al., 2014; Doğan, 2013; Lauriola & Iani, 2015). The extraversion dimension is characterized by being active, energetic, enthusiastic, and talkative; the agreeableness dimension by being grateful, forgiving, generous, and kind; the conscientiousness dimension by being reliable, careful, planned, and effective; the openness to experience dimension by being artistic, imaginative, curious, and original; and the neuroticism dimension by being anxious, tense, self-pitying, and worried (McCrae & John, 1992). In this context, it can be stated that the positive personality traits of extraversion, agreeableness, conscientiousness, and openness to experience are positively associated with happiness, whereas neuroticism, characterized by negative tendencies, is negatively

associated. These findings are consistent with the existing literature, which similarly highlights positive associations between positive personality traits and happiness, and a negative association with neuroticism.

When the research findings are examined, it is observed that personality traits and self- compassion levels significantly predict happiness levels. It can be stated that the self-compassion levels and the personality traits of extraversion and neuroticism explain about 45% of the happiness levels of young adults. Ford et al. (2016) stated that personality traits play a determining role in an individual's happiness. In the current study, it was found that the dimensions of extraversion and neuroticism among personality traits predict individuals' happiness levels. Doğan (2013) indicated that the personality traits most strongly predicting happiness are neuroticism and extraversion. Neuroticism is associated with negative affect, whereas extraversion is linked to positive affect (Carr, 2016). A study by Yoon et al. (2013) found strong relationships between neuroticism and the likelihood of experiencing depressive symptoms. Neuroticism is seen as a source of anxiety and depression (Pelechano et al., 2013). Individuals with high levels of neuroticism are more prone to experiencing emotions such as worry, fear, sadness, anger, shame, and irritability (Basım et al., 2009; Bruck & Allen, 2003). The more frequent occurrence of such negative emotions can be considered a significant negative predictor of happiness levels. Extraversion, on the other hand, is a personality trait characterized by being lively, excited, talkative, cheerful, and social (Somer et al., 2002). Extraversion is associated with enjoying social interaction and experiencing positive social emotions (Pelechano et al., 2013). Individuals with high extraversion tend to experience deeper and more fulfilling interpersonal relationships (Doğan, 2013). In a study by Tan et al. (2018), it was found that the personality trait of extraversion positively affects happiness levels through social support and hope. Based on these findings, it can be stated that extraversion positively predicts levels of happiness, and this result aligns with previous research.

Self-compassion can be defined as an individual's ability to be open to their own suffering and show tolerance towards themselves (Neff, 2003a). Upon examining the existing research, studies have shown that, similar to the results of this study, self-compassion positively predicts happiness levels (Inam et al., 2021; Pastore et al., 2023; Tingaz et al., 2022; Topkaya et al., 2022; Tunca, 2022). Individuals with high levels of self-compassion are aware of their problems, shortcomings, and weaknesses but instead of adopting a critical and harsh attitude towards themselves, they display a kinder and more compassionate approach. In this way, self-compassion helps in the development of positive emotions in the face of negative life events (Leary et al., 2008). Studies have shown positive relationships between self-compassion and positive emotions (Çarkıt & Yalçın, 2021; Deniz et al., 2012; Neff, 2011a). Furthermore, there are studies that demonstrate negative relationships between self-compassion and depression (Kurtses-Gürsoy & Akkoyun, 2023; Lou et al., 2022; Zhang et al., 2019). In this context, it can be stated that the finding that self-compassion significantly and positively predicts happiness levels is consistent with the existing literature and similar studies.

In conclusion, the findings of this study reveal the impact of personality traits and self-compassion on happiness levels. However, the research has some limitations. The study was conducted with young adult participants, and conducting further studies with different age groups would enhance the generalizability of the results and contribute to the literature. Additionally, the study employed a relational model, which is one of the quantitative research methods. To gain alternative perspectives and benefit from other methods, future research could use qualitative and mixed research designs. Given the limitations of the cross-sectional design in this study, future research might consider using longitudinal approaches to better investigate the interactions among variables over time. Furthermore, understanding the relationships among happiness, self-compassion, and personality traits is expected to contribute to future research. Identifying key psychological factors related to happiness, which is considered a fundamental purpose of life (Veenhoven, 1994), is important for both researchers and practitioners. The results of this study may be useful in developing psychoeducational programs aimed at enhancing happiness. Furthermore, these findings could inform workshops designed to improve students' happiness in units such as university guidance centers.

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The Relationship between Personality Types and Teaching Styles of Turkish Teachers

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ABSTRACT

The aim of this study is to reveal the relationship between personality types and teaching styles of Turkish teachers and to examine these characteristics according to gender, age and years of service variables. The study group of the research, which was conducted according to the relational survey model, one of the quantitative research methods, consisted of 105 Turkish teachers working in various provinces in Turkey. "Grasha-Reichmann Teaching Style Scale" developed by Grasha (1994) and "Five Factor Personality Scale" developed by John et al. (1991) were used in the study. Data were collected through Google Form. Due to skewed distribution, the Mann-Whitney U test was used in the analysis of the gender variable, and the Kruskal Wallis H Test was used in the analysis of the age and seniority variables. In addition, the relationship between teaching styles and personality types was examined with Spearman's rho. According to the findings, knowledge transmitter teaching style was found to be medium while authoritarian, personal, guide and counselor teaching styles were found to be high. In addition, teachers' extraversion, agreeableness, self-discipline and openness to development personality types show positive personality values, while neuroticism personality type has a negative personality value. While significant differences were found in personality types and teaching styles according to gender variable, significant differences were not found according to age and seniority variables. While there was no significant relationship between neuroticism personality type and all teaching styles, a positive and significant relationship was found between other personality types and teaching styles.

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INTRODUCTION

With the fundamental changes in today's educational approach, the constructivist approach, in which the individual actively participates in the learning process, has taken a prominent position in the field of education. This approach is based on the idea that individuals make learning meaningful by constructing their own knowledge structures rather than receiving and consuming knowledge as an external element. The constructivist educational approach acknowledges that the learning process is shaped by individual differences and aims to create a flexible, participatory, and student-centered environment to support this process. This has led to significant changes in both teaching methods and techniques, as well as in the roles of teachers and students (Gülten & Özkan, 2014). At this point, the teaching styles of educators have also been influenced by these changes.

In the traditional educational approach, the teacher was seen as the sole source and transmitter of knowledge. However, the constructivist approach has transformed this one-sided role of the teacher into that of a guide who leads the learning process, provides direction, and helps learners realize their potential (Akpınar & Ergin, 2005). As a guide, the teacher focuses on nurturing learners to become independent thinkers and problem solvers by considering their interests and needs. In this regard, teachers use effective questioning techniques to encourage students to think critically. Additionally, teachers prepare learning materials and environments that support students' learning processes, develop collaborative working methods, and continuously improve the learning process through ongoing assessment (Fer & Cırık, 2007; Orlich et al., 2012). Alongside these goals, effective classroom management also emerges as a key element of teaching (Wang, Haertel & Walberg, 1993). This is because classroom management is a critical factor that directly affects the efficiency and quality of learning processes. In this context, the teacher plays the most decisive role in the classroom environment. The teacher's primary responsibility is to encourage positive behaviors that support the learning process, ensure their continuity, and minimize negative behaviors. This not only contributes to improving the learning environment but also helps shape students' overall behavior in a positive direction. For educational processes to be conducted effectively, teachers' instructional styles play a determining role (Cohen & Amidon, 2004). Therefore, various factors such as teachers' past experiences, their readiness to teach, individual teaching styles, and distinct personality types must be taken into account.

The educational process is shaped by the teaching styles and personality types of teachers (Kim, 1993). Each teacher adopts different methods for delivering knowledge, interacting with students, and organizing the learning environment. Behind these methods lie the teacher’s personality traits, values, experiences, and educational philosophy. Teaching styles define how teachers conduct their lessons, while personality types have a profound influence on how these styles are applied (Erkan & Şirin, 2024; Üredi, 2006). These two factors significantly determine the quality of the educational environment and students' learning experiences (Behnam & Bayazidi, 2013).

Teaching styles encompass the behaviors teachers’ exhibit in the classroom, the learning opportunities they offer to students, and their lesson planning strategies. For example, a teacher perceived as an authority on knowledge may adopt an expert approach, providing students with a detailed and disciplined learning environment. On the other hand, a teacher who emphasizes students' individual responsibilities may prefer a facilitator teaching style, encouraging independent learning. Teaching styles are not only shaped by the teacher’s preferences but also by the content of the lesson, the needs of the students, and educational goals (Çelebi, 2006). In this context, a teacher may combine multiple teaching styles in different situations; for instance, adopting an expert approach when delivering theoretical knowledge while taking on a guiding role during practical activities.

Personality types profoundly influence the way teaching styles are implemented and their overall impact (Andabai, 2013). An introverted teacher tends to focus on creating a structured and planned learning environment, where discipline and order may form the core elements of their teaching style. On

the other hand, an extroverted teacher may place greater importance on building individual relationships with students through a more social and dynamic approach, employing more flexible teaching methods. Teachers with creative and innovative personalities can develop different techniques to make the learning process more engaging and to capture students' interest (Gençer et al., 2023). This diversity not only addresses different learning styles among students but also enriches the teaching environment.

The combination of teaching styles and personality types has a direct effect on students' academic success and learning experiences. For example, teachers with a high level of knowledge and a disciplined approach can enhance students' academic performance. However, since this approach may limit students' active participation, it is important to use flexible and interactive methods to support students' motivation for learning (Alan, 2020). Similarly, a teaching environment where teachers provide individual guidance and encourage students to actively participate in the learning process increases both learning retention and students' confidence and sense of responsibility (Yıldırım & Dönmez, 2008). In this process, it is essential for teachers to adopt a flexible attitude and consider both their own personality traits and the individual needs of their students. Every classroom is a unique community with its own dynamics, and teachers are expected to develop strategies that align with these dynamics. For example, while an authoritarian approach may be effective in one classroom, another classroom may require a strategy focused on greater independence and creative freedom for students. Teachers can strike a balance between their teaching styles and personality types by analyzing their strengths and the needs of the classroom environment (Raven et al., 1993). In this way, a learning environment that supports both academic success and the development of students' individual potential can be created. Success in education is not merely about transmitting knowledge but also about enabling students to discover themselves in the learning process—something that requires a harmonious combination of the teacher's personality and teaching style.

Teaching Styles

Each teacher may adopt different methods and strategies in the teaching process. This diversity directly affects the educational process. The constructivist approach acknowledges that educators may follow different paths and methods in the teaching process. Every educator has a different teaching style, motivation, area of interest, and set of needs (Kulinna & Cothran, 2003). Therefore, when planning teaching processes, it is important to consider not only the individual differences of students but also those of educators (Turgut et al., 2016). Teachers' ability to adopt flexible teaching styles enhances the quality of the process through which learners access and construct knowledge. For this reason, teaching style becomes a focal concept in the educational process.

Teaching style is defined as a teacher's personal approach and preferences in presenting information, interacting with students, and guiding the learning process (Dunn & Dunn, 1979; Heimlich & Norland, 2002). This style is shaped by the teacher's beliefs, values, pedagogical understanding, and individual characteristics related to education. At the same time, it evolves in harmony with external factors such as the subject matter, the needs of the class, and the learning objectives. Teaching style manifests itself in various dimensions, such as classroom management, communication style, use of learning materials, and assessment methods. Within the broad understanding of teaching styles, various classifications have been made by Dunn & Dunn (1979), Fischer & Fischer (1979), Witkin (1979), Ellis (1979), Brostrom (1979), Joyce & Weil (1980), Broudy (1982), Butler (1987), Heimlich & Van Tilburg (1990), Borich (1992), Brekelmans, Levy & Rodriguez (1993), Quirk (1994), Grasha (1996), Levine (1998), and Mosston (2002). Among these classifications, the teaching style classification developed by Grasha (1996) has been chosen for detailed examination in this study based on expert opinions. Grasha (1996) explained teaching styles through a classification model designed to define teachers' interactions in the classroom and their approaches to teaching methods. This model focuses on understanding teachers' individual characteristics and preferred teaching methods. Grasha (1996) developed teaching styles for teachers around 5 elements:

1) Expert Teaching Style: The expert teaching style is an instructional approach in which the teacher is regarded as an authority and a source of knowledge in the classroom, based on their expertise and experience. In this style, the teacher emphasizes their deep knowledge and expertise in a particular subject area and focuses on transmitting this knowledge to students. The teacher's role is to ensure that students master the subject thoroughly and are equipped with sufficient knowledge in that area.

2) Authoritative Teaching Style: The authoritative teaching style is characterized by the teacher maintaining strong authority and control in the classroom, with clearly defined rules and expectations. In this style, teachers deliver information to students directly and systematically while closely monitoring student behavior and the learning process.

3) Personal Teaching Style: The personal teaching style is an instructional approach in which the teacher serves as a guide and model in the classroom, helping students learn by demonstrating their own behaviors and thought processes. In this style, the teacher acts as a "role model," sharing their experiences and methods to show students how to develop specific skills, attitudes, and knowledge sets.

4) Facilitator Teaching Style: The facilitator teaching style involves the teacher assuming the role of a guide or consultant in the learning process, providing support based on students' individual needs and learning styles. In this style, the teacher places the student at the center of learning and focuses on helping students develop independent thinking, problem-solving, and collaboration skills. Rather than authoritarian knowledge transmission, the facilitator teacher helps students actively shape their own learning processes.

5) Delegator Teaching Style: The delegator teaching style involves the teacher gradually transferring authority over the learning process to students, focusing on helping them develop independent learning and problem-solving skills. In this style, the teacher initially provides guidance but encourages students to take responsibility for their own learning and manage their own learning processes as the process progresses.

Personality Types

Personality types are psychological concepts used to understand and classify the way individuals think, feel and behave (Atkinson et al., 1993). Such typologies are the result of efforts to understand the traits that people show similar tendencies in different situations. Personality types help to understand how individuals interact with environmental and social factors and how they react in certain situations (Robbins & Judge, 2011).

There are two main approaches to understanding personality types: Typological Approach and Dimensional Approach. The typological approach is based on the idea that individuals can be divided into certain categories. In this approach, people are grouped under patterns or types. Although the typological approach facilitates personality analysis, it carries the risk of ignoring individual differences. The dimensional approach, on the other hand, evaluates personality on the basis of certain traits and argues that each individual may carry these traits at different intensities. The most well-known model of the dimensional approach, the Five Factor Model, examines personality in five basic dimensions: extraversion, agreeableness, conscientiousness, emotional stability and openness (John et al., 1991). This model can analyze the differences between individuals in a more detailed way by evaluating personality traits on a spectrum. While the typological approach provides a clearer framework because it categorizes personality, the dimensional approach is more comprehensive in explaining individual differences. Both approaches often complement each other by offering different perspectives in personality analysis.

The methods used to measure personality types are usually based on psychometric instruments. These instruments draw conclusions by analyzing individuals' responses to their own behaviors, thoughts and feelings. Measurements are based on two basic approaches: self-assessment scales and behavioral observations and projection tests (Avcu, 2006; Taner, 2005). Self-assessment scales ask individuals to

evaluate their reactions to certain situations or their general behavior. Responses to statements such as "I feel energetic and outgoing" can be given as an example. Behavioral observations and projection tests are more complex methods based on observing individuals' natural behavior or their reactions to a task. Projection tests try to reveal the unconscious thoughts and feelings of the individual.

When we look at the researchers who conducted studies on personality types, important names come to the fore. Carl Jung (1921) is the founder of the Theory of Psychological Types. Gordon Allport developed one of the first comprehensive theories to classify personality traits and introduced the concept of trait. Hans Eysenck developed the three-dimensional personality model. Eysenck (1975) associated personality with biological foundations and defined the dimensions of personality as extraversion-introversion and neuroticism-stability. Raymond Cattell (1973) defined 16 personality factors using factor analysis technique. Paul Costa and Robert McCrae (1992) are the researchers who developed the Five Factor Model of Personality and popularized the NEO-PI tests in personality assessment. Isabel Briggs Myers and Katharine Cook Briggs (1962) developed Jung's theory and created the Myers-Briggs Type Indicator. Based on the literature created by these prominent researchers, the measurement tools developed to measure personality types are listed below:

1. Five Factor Personality Model (Big Five): It measures personality in five dimensions: extraversion, agreeableness, conscientiousness, emotional stability and openness to experience. NEO-PI-R (NEO Personality Inventory-Revised) and NEO-FFI (Five-Factor Inventory) measurement tools are used.

2. Myers-Briggs Type Indicator (MBTI): Based on Carl Jung's theory of psychological types. It classifies people into 16 different personality types. It focuses on four basic dimensions: Introversion/Extraversion, Intuition/Sensation, Thinking/Feeling and Perceiving/Judging.

3. Minnesota Multiphasic Personality Inventory (MMPI): It is a clinically used tool. It was developed to assess individuals' personality structure and potential mental health problems.

4. Eysenck Personality Questionnaire (EPQ): Based on the theory of Hans Eysenck. It measures personality in three dimensions: Psychoticism, Extraversion/Introversion, Neuroticism.

5. 16 Personality Factor Inventory (16PF): Developed by Raymond Cattell. It assesses personality traits on 16 primary factors and five secondary dimensions.

6. Rorschach Test: A type of projection test. The unconscious thoughts and feelings of the individual are analyzed through reactions to inkblots.

7. Thematic Apperception Test (TAT): The participant is asked to tell stories about ambiguous images. The stories reveal the individual's motivations and inner conflicts.

Many theories have been developed to systematically understand and measure human personality. One of the most widely accepted approaches among these is the Five Factor Personality Model. Developed in 1991 by John, Donahue and Kentle, this model explains human personality in terms of five basic dimensions. These dimensions allow individuals' personality traits to be evaluated on a scientific basis. The dimensions are listed and explained below:

Extraversion: This dimension measures whether the individual is energetic, sociable and outgoing (Trouba, 2007). Individuals with high levels of extraversion generally enjoy social activities, are comfortable expressing themselves and communicate easily with others. Individuals with lower levels are more introverted, quiet and enjoy solitary activities.

Agreeableness: Agreeableness reflects the extent to which an individual is warm, helpful and empathetic towards others (Moody, 2007). Individuals with high agreeableness exhibit a structure that is open to cooperation, kind and cares about the feelings of others. People with low agreeableness may be more competitive and critical.

Responsibility: Responsibility dimension refers to individuals' tendency to act in an organized, planned and disciplined manner (Digman & Takemoto-Chock, 1981). Individuals with high levels of responsibility are generally goal-oriented, reliable and self-disciplined. Individuals with lower levels may be unplanned, disorganized and sometimes negligent.

Emotional Stability: This dimension assesses an individual's capacity to cope with stress and emotional stability (Costa & McCrae, 1992). Individuals with low emotional stability (or high neuroticism) are more anxious, emotionally volatile and sensitive to stressful situations. Individuals with high levels of emotional stability are generally calmer, more confident and emotionally controlled.

Openness to Experience: Openness to experience refers to individuals' interest in innovations, different ideas and creative processes (Church, 1993). People who are high on this dimension are generally imaginative, intellectually curious and prone to artistic activities. Those with lower levels are more traditional, practical and cautious towards innovations.

The Five-Factor Personality Model helps us understand many situations in individuals' lives. Personality traits play a determining role in various areas such as career choice, job satisfaction, social relationships, stress management, and even health (Merdan, 2013). For example, individuals with a high level of conscientiousness tend to be more successful in the workplace, while a high level of extraversion can make it easier to form strong social bonds. The Five-Factor Personality Model provides a strong framework for understanding individual differences and respecting these differences (Demirci, Özler, & Girgin, 2009). Moreover, it can be considered an effective tool for fostering personal awareness and helping individuals better understand themselves.

Purpose

The main aim of the research is to identify the personality types and teaching styles adopted by Turkish language teachers and to determine whether these characteristics differ according to the variables of gender, age, and years of service. In line with this aim, data were collected from Turkish language teachers working in secondary schools affiliated with the Ministry of National Education. The sub-problems of the research are listed below:

1. What are the teaching styles and personality types of Turkish language teachers?

2. Is there a significant relationship between gender, age, professional seniority, and the teaching styles preferred by teachers?

3. Is there a significant relationship between gender, age, professional seniority, and the personality types of teachers?

4. Is there a significant relationship between the teaching styles and personality types of Turkish language teachers?

METHOD

In this study, the correlational survey model, which is one of the quantitative research methods, was used. The correlational survey model is a type of research that aims to examine the relationships between variables. This method is used to determine the existence, direction, and degree of the relationship between two or more variables. Understanding how dependent and independent variables affect each other is an important step in scientific research, and the correlational survey method addresses this need.

Within the scope of this model, it is investigated whether the variables change together, that is, whether there is a connection or interaction between them (Karasar, 2011). The data obtained during this process not only reveal whether two variables act together but also allow us to understand the direction and level of this relationship. This method is an important tool for understanding the existence of relationships. Due to these characteristics of the correlational survey method, it was preferred in this study

to examine the relationship between the personality types and teaching styles of Turkish language teachers.

Study Group

The study group of the research consists of a total of 105 Turkish language teachers, including 46 female and 59 male teachers, working in secondary schools affiliated with the Ministry of National Education. The study group was determined using the convenience sampling method.

In research, the convenience sampling method is frequently preferred when it is difficult to reach all individuals in the population or when it is not possible to identify each individual separately. One of the main reasons for choosing this method is that it allows the researcher to reach a target-sized study group. According to Büyüköztürk et al. (2008), this method provides a practical solution for researchers, especially when the population is large and difficult to access. Considering the difficulty of reaching the entire population, the convenience sampling method facilitates the process and increases the feasibility of the research.

Data Collection Instruments

Teaching Styles Scale

In this study, the "Grasha-Reichmann Teaching Style Inventory," developed by Grasha (1994), was used to determine teachers' teaching styles. The Turkish adaptation of this scale was carried out by Sarıtaş and Süral (2010), who also conducted validity and reliability studies. The scale consists of 40 items and includes five different sub-dimensions. It is structured as a five-point Likert-type scale. Participants were asked to express their level of agreement with each statement on the scale. The sub-dimensions of the scale are as follows: The "Expert" teaching style reflects a knowledge transmission-oriented approach. The "Formal Authority" style represents the teacher's strong orientation toward classroom management and control. The "Personal" teaching style aims to establish a close relationship between the teacher and the student. The "Facilitator" and "Delegator" styles are related to the teacher's role in guiding and supporting students when needed. Sarıtaş and Süral (2010) determined the linguistic validity ratio of the scale as .80 during the Turkish adaptation process. In the reliability analysis of the scale, the Cronbach's Alpha coefficient was calculated as .875. In the analysis conducted with the study group within the scope of this research, the internal consistency coefficient of the scale was found to be quite high at .91. This finding indicates that the scale provides both reliable and consistent results.

Personality Types Scale

In the study, the Big Five Personality Scale, developed by John et al. (1991), was used to determine teachers' personality types. The scale consists of 44 items and is structured as a five-point Likert-type measure. It includes the sub-dimensions of extraversion, agreeableness, conscientiousness, openness to experience, and neuroticism. Participants were asked to express their level of agreement with each statement on the scale. The Turkish adaptation of the scale was conducted by Alkan (2006). The reliability results for the sub-dimensions of extraversion, agreeableness, conscientiousness, openness to experience, and neuroticism were found to be .89, .67, .79, .79, and .79, respectively. The Cronbach's Alpha coefficient for the overall scale was calculated as .87, and the internal consistency coefficient was measured at .89. These findings indicate that the scale provides both reliable and consistent results.

Data Collection and Analysis

The data were collected from 105 Turkish teachers through Google Forms during the 2024–2025 academic year. Teachers were contacted, and the necessary information was provided to ensure more objective responses.

The data analysis process began with distribution analyses of the collected data. SPSS 25 statistical software was used for the distribution analysis and other tests. The Kolmogorov-Smirnov test was employed for the distribution analysis since the sample size exceeded 50 (n=105). According to Büyüköztürk (2002), the Kolmogorov-Smirnov test is more suitable for distribution analyses in studies

with more than 50 participants. The results of the Kolmogorov-Smirnov distribution analysis for the data obtained from the Teaching Styles Scale and the Personality Types Scale applied to teachers are presented in Table 1.

Table 1. *Scatter analysis results*

Tests	Kolmogorov-Simirnov Test				
	Statistic	df	Sig	Skewness	Kurtosis
Teaching Styles Scale	,175	105	,000	-1,877	5,438
Personality Types Scale	,116	105	,001	-1,276	2,360

Significance (Sig.) values lower than $p<0.05$ in the Kolmogorov-Smirnov test indicate that the data are not normally distributed (Büyüköztürk, 2002). Skewness and kurtosis values were also examined. If the skewness coefficient is not within the range of +1 and -1, the data are considered to be non-normally distributed (Köklü, Büyüköztürk & Çokluk Bökeoğlu, 2007). In addition to these values, histograms of the data were reviewed, confirming characteristics of non-normal distribution. As a result of the analyses, the Mann-Whitney U test was used for gender-related analyses, while the Kruskal-Wallis H test was applied for age and seniority-related analyses. The relationship between teaching styles and personality types was examined using Spearman's Rank-Order Correlation. The results regarding teachers' teaching styles and personality types were presented using mean scores and corresponding ratings. The confidence interval was set at 95%, and $p<0.05$ was considered significant in the analyses.

For the evaluation of the sub-dimensions of teaching styles, the average score thresholds determined by Grasha (1994) were used as the evaluation criteria. The score thresholds for teaching styles set by Grasha (1994) are presented in Table 2.

Table 2. *Teaching styles rating*

Teaching styles	Degree of Teaching Styles		
	Low	Medium	High
Expert Teaching Style	[1.0 - 2.8]	[2.9 - 3.8]	[3.9 - 5.0]
Authoritative Teaching Style	[1.0 - 1.8]	[1.9 - 3.0]	[3.1 - 5.0]
Personal Teaching Style	[1.0 - 2.8]	[2.9 - 3.4]	[3.5 - 5.0]
Facilitator Teaching Style	[1.0 - 2.9]	[3.0 - 4.0]	[4.1 - 5.0]
Delegator Teaching Style	[1.0 - 1.8]	[1.9 - 2.8]	[2.9 - 5.0]

Regarding personality types, the mean scores of the items representing each sub-dimension were calculated. Since the neutral value of the scale is 3, mean scores above 3 indicate positive personality traits, while scores below 3 reflect negative personality traits (Göl Battı, 2019).

Ethic

Ethics committee permission for the study was obtained from Necmettin Erbakan University Social and Human Sciences Scientific Research Ethics Committee (Date: 03.05.2024/2024/394 Protocol No: 09).

FINDINGS

The first sub-question of the study is expressed as "What are the teaching styles and personality types of Turkish teachers?" The results of the analysis related to this sub-question are presented in Table 3.

Table 3. *Teaching styles of Turkish teachers*

	Teaching Styles				
	Expert Teaching Style	Authoritative Teaching Style	Personal Teaching Style	Facilitator Teaching Style	Delegator Teaching Style
Mean	3,7485	3,6417	3,9767	4,1129	3,7366
Degree	Medium	High	High	High	High

According to Table 3, the information-conveying teaching style was found to be at a moderate level, while the authoritarian, personal, guiding, and advising teaching styles were determined to be at a high level.

The analysis results related to the personality types of the Turkish teachers who participated in the study are presented in Table 4.

Table 4. *Personality types of Turkish teachers*

	Personality Types				
	Extraversion	Agreeableness	Conscientiousness	Openness to experience	Neuroticism
Mean	3,6929	3,9937	3,6635	3,7952	2,8190
Degree	Positive	Positive	Positive	Positive	Negative

According to Table 4, the agreeableness personality type had the highest mean score, while the neuroticism personality type had a significantly lower mean score compared to other groups. The mean scores of the extraversion, conscientiousness, and openness to experience personality types were found to be close to each other. Additionally, extraversion, agreeableness, conscientiousness, and openness to experience showed positive personality traits, whereas neuroticism displayed negative personality traits.

The second sub-question of the study is expressed as "Is there a significant relationship between gender, age, professional experience, and the teaching styles preferred by teachers?" The results of the Mann-Whitney U test related to this sub-question are presented in the tables below.

Table 5. *Teachers' teaching styles according to gender variable*

Teaching Styles	Group	n	Rank Average	Ordinal Sum	U	p
Expert Teaching Style	Male	59	48,25	2846,50	1076,500	,069
	Female	46	59,10	2718,50		
Authoritative Teaching Style	Male	59	49,75	2935,00	1165,000	,214
	Female	46	57,17	2630,00		
Personal Teaching Style	Male	59	46,67	2753,50	983,500	,015*
	Female	46	61,12	2811,50		
Facilitator Teaching Style	Male	59	47,72	2815,50	1045,500	,043*
	Female	46	59,77	2749,50		
Delegator Teaching Style	Male	59	49,77	2936,50	1166,500	,218
	Female	46	57,14	2628,50		

*p<0,05

According to Table 5, there was no statistically significant relationship between gender and the information-conveying (U=1076.500, p=0.069, p>0.05), authoritarian (U=1165.500, p=0.214, p>0.05), and advising (U=1166.500, p=0.218, p>0.05) teaching styles. However, a statistically significant difference in favor of female teachers was found in the personal (U=983.500, p=0.015, p<0.05) and guiding (U=1045.500, p=0.043, p<0.05) teaching styles.

The results of the Kruskal-Wallis H test related to teachers' teaching styles based on age groups are shown in Table 6.

Table 6. *Teachers' teaching styles according to age variable*

Teaching Styles	Age	n	Rank Average	df	X^2	p
Expert Teaching Style	22-27	14	55,43	5	4,227	,517
	28-33	19	51,26			
	34-39	23	54,57			
	40-45	29	55,76			
	46-51	15	53,97			
	52 +	5	26,70			
Authoritative Teaching Style	22-27	14	55,68	5	4,227	,430
	28-33	19	48,58			
	34-39	23	55,17			
	40-45	29	57,24			
	46-51	15	53,27			
	52 +	5	26,90			
Personal Teaching Style	22-27	14	57,21	5	4,725	,450
	28-33	19	49,32			
	34-39	23	57,11			
	40-45	29	54,81			
	46-51	15	52,57			

	52 +	5	27,10			
Facilitator Teaching Style	22-27	14	57,46	5	5,669	,340
	28-33	19	55,29			
	34-39	23	56,39			
	40-45	29	51,19			
	46-51	15	54,17			
	52 +	5	23,20			
Delegator Teaching Style	22-27	14	53,18	5	4,601	,466
	28-33	19	53,76			
	34-39	23	58,07			
	40-45	29	55,02			
	46-51	15	48,70			
	52 +	5	27,50			

According to the mean ranks in Table 6, the scores of teachers aged 52 and above were lower than those of other age groups, which were more balanced. However, no statistically significant difference was found between teaching styles and age groups (p>0.05).

The results of the Kruskal-Wallis H test related to teachers' teaching styles based on professional experience are shown in Table 7.

Table 7. *Teachers' teaching styles according to seniority variable*

Teaching Styles	Seniority	n	Rank Average	df	X^2	p
Expert Teaching Style	1-5 years	16	56,63	4	1,848	,764
	6-11 years	21	49,88			
	12-17 years	24	58,17			
	18-23 years	31	52,15			
	24 +	13	46,08			
Authoritative Teaching Style	1-5 years	16	53,34	4	,355	,986
	6-11 years	21	51,43			
	12-17 years	24	54,60			
	18-23 years	31	54,16			
	24 +	13	49,38			
Personal Teaching Style	1-5 years	16	55,47	4	1,358	,852
	6-11 years	21	50,76			
	12-17 years	24	58,42			
	18-23 years	31	50,32			
	24 +	13	49,96			
Facilitator Teaching Style	1-5 years	16	55,81	4	1,174	,882
	6-11 years	21	56,50			
	12-17 years	24	53,42			
	18-23 years	31	51,81			
	24 +	13	45,96			
Delegator Teaching Style	1-5 years	16	54,38	4	3,953	,412
	6-11 years	21	52,48			
	12-17 years	24	62,13			
	18-23 years	31	49,76			
	24 +	13	43,04			

According to Table 7, the scores of teachers with 52 years of experience and above were lower than those of other age groups, which were similarly distributed. However, no statistically significant difference was found between teaching styles and professional experience groups (p>0.05).

The third sub-question of the study is expressed as "Is there a significant relationship between gender, age, professional experience, and the personality types of teachers?" The results of the analysis related to this sub-question are presented in Table 8.

Table 8. *Personality types of teachers according to the gender variable*

Personality Types	Group	n	Rank Average	Ordinal Sum	U	p
Extraversion	Male	59	46,42	2739,00	969,000	,012*
	Female	46	61,43	2826,00		
Agreeableness	Male	59	48,24	2846,00	1076,000	,069

	Female	46	59,11	2719,00		
Conscientiousness	Male	59	44,90	2649,00	879,000	,002*
	Female	46	63,39	2916,00		
Openness to experience	Male	59	51,50	3038,50	1268,500	,567
	Female	46	54,92	2526,50		
Neuroticism	Male	59	50,08	2955,00	1185,000	,266
	Female	46	56,74	2610,00		

*p<0,05

According to Table 8, no statistically significant relationship was found between gender and the agreeableness (U=1076.000, p=0.069, p>0.05), openness to experience (U=1268.500, p=0.567, p>0.05), and neuroticism (U=1185.000, p=0.266, p>0.05) personality types. However, a statistically significant difference in favor of female teachers was found in the extraversion (U=969.000, p=0.012, p<0.05) and conscientiousness (U=879.000, p=0.002, p<0.05) personality types.

The results of the Kruskal-Wallis H test related to teachers' personality types based on age groups are presented in Table 9.

Table 9. *Personality types of teachers according to the age variable*

Personality Types	Age	n	Rank Average	df	X^2	p
Extraversion	22-27	14	66,68	5	7,299	,199
	28-33	19	48,03			
	34-39	23	49,30			
	40-45	29	58,84			
	46-51	15	47,33			
	52 +	5	33,70			
Agreeableness	22-27	14	57,21	5	4,693	,454
	28-33	19	56,29			
	34-39	23	47,30			
	40-45	29	53,91			
	46-51	15	59,33			
	52 +	5	30,60			
Conscientiousness	22-27	14	61,14	5	4,261	,512
	28-33	19	44,21			
	34-39	23	48,85			
	40-45	29	54,26			
	46-51	15	61,37			
	52 +	5	50,30			
Openness to experience	22-27	14	61,11	5	6,068	,300
	28-33	19	58,58			
	34-39	23	51,37			
	40-45	29	52,84			
	46-51	15	50,53			
	52 +	5	24,90			
Neuroticism	22-27	14	51,75	5	4,967	,420
	28-33	19	59,53			
	34-39	23	61,48			
	40-45	29	47,40			
	46-51	15	44,10			
	52 +	5	51,90			

According to the mean ranks in Table 9, the scores of teachers aged 52 and above were lower than those of other age groups in the extraversion, agreeableness, and openness to experience personality types. Additionally, the scores were higher in the 22–27 age group for extraversion, the 46–51, 22–27, and 23–33 age groups for agreeableness, the 22–27 and 46–51 age groups for conscientiousness, the 22–27 and 28–33 age groups for openness to experience, and the 34–39 and 28–33 age groups for neuroticism. However, no statistically significant difference was found between personality types and age groups (p>0.05).

The results of the Kruskal-Wallis H test related to teachers' personality types based on professional experience are presented in Table 10.

Table 10. *Personality types of teachers according to the seniority variable*

Personality Types	Seniority	n	Rank Average	df	X^2	p
Extraversion	1-5 years	16	63,88	4	4,254	,373
	6-11 years	21	51,14			
	12-17 years	24	46,35			
	18-23 years	31	56,47			
	24 +	13	46,62			
Agreeableness	1-5 years	16	57,09	4	3,657	,454
	6-11 years	21	56,48			
	12-17 years	24	43,33			
	18-23 years	31	57,11			
	24 +	13	50,38			
Conscientiousness	1-5 years	16	57,28	4	2,340	,673
	6-11 years	21	44,88			
	12-17 years	24	51,58			
	18-23 years	31	55,79			
	24 +	13	56,81			
Openness to experience	1-5 years	16	59,25	4	2,983	,561
	6-11 years	21	57,93			
	12-17 years	24	50,10			
	18-23 years	31	53,06			
	24 +	13	42,54			
Neuroticism	1-5 years	16	49,94	4	5,720	,221
	6-11 years	21	62,21			
	12-17 years	24	58,50			
	18-23 years	31	43,81			
	24 +	13	53,65			

According to the mean ranks in Table 10, the scores of teachers with 12–17 years of experience were lower for extraversion and agreeableness, 6–11 years of experience for conscientiousness, 24 years or more for openness to experience, and 18–23 years for neuroticism. Higher scores were observed for the 1–5 year group in extraversion, the 18–23 and 1–5 year groups in agreeableness, the 1–5 year group in conscientiousness, the 1–5 year group in openness to experience, and the 6–11 year group in neuroticism. However, no statistically significant difference was found between personality types and professional experience groups ($p>0.05$).

The fourth sub-question of the study is expressed as "Is there a significant relationship between the teaching styles and personality types of Turkish teachers?" The results of the analysis related to this sub-question are presented in Table 11.

Table 11. *Spearman Ordinal Correlation on teachers' teaching styles and personality types*

Personality Types		Teaching Styles				
		Expert Teaching Style	**Authoritative Teaching Style**	**Personal Teaching Style**	**Facilitator Teaching Style**	**Delegator Teaching Style**
Extraversion	Spearman r	,282	,214	,358	,467	,328
	p	,004*	,028*	,000*	,000*	,001*
Agreeableness	Spearman r	,401	,272	,436	,537	,283
	p	,000*	,005*	,000*	,000*	,003*
Conscientiousness	Spearman r	,397	,276	,435	,504	,348
	p	,000*	,004*	,000*	,000*	,000*
Openness to experience	Spearman r	,352	,269	,450	,560	,410
	p	,000*	,005*	,000*	,000*	,000*
Neuroticism	Spearman r	-,039	,026	-,011	-,111	,024
	p	,690	,796	,911	,261	,805

* The correlation was significant at the $p<0.05$ level.

According to Table 11, the relationship between personality types and teaching styles is shown in

terms of level and direction. For the extraversion personality type, a low positive and significant relationship was found with information-conveying ($r=0.282$, $p<0.004$) and authoritarian ($r=0.214$, $p<0.028$) teaching styles, and a moderate positive and significant relationship was found with personal ($r=0.358$, $p<0.000$), guiding ($r=0.467$, $p<0.000$), and advising ($r=0.328$, $p<0.001$) teaching styles. For the agreeableness personality type, a moderate positive and significant relationship was found with information-conveying ($r=0.401$, $p<0.000$) and personal ($r=0.436$, $p<0.000$) teaching styles, and a low positive and significant relationship was found with authoritarian ($r=0.272$, $p<0.005$) and advising ($r=0.283$, $p<0.003$) teaching styles. For the conscientiousness personality type, a moderate positive and significant relationship was found with information-conveying ($r=0.397$, $p<0.000$), personal ($r=0.435$, $p<0.000$), guiding ($r=0.504$, $p<0.000$), and advising ($r=0.348$, $p<0.000$) teaching styles, and a low positive and significant relationship was found with authoritarian ($r=0.276$, $p<0.004$) teaching style. For the openness to experience personality type, a moderate positive and significant relationship was found with information-conveying ($r=0.352$, $p<0.000$), personal ($r=0.450$, $p<0.000$), guiding ($r=0.560$, $p<0.000$), and advising ($r=0.410$, $p<0.000$) teaching styles, and a low positive and significant relationship was found with authoritarian ($r=0.269$, $p<0.005$) teaching style. No significant relationship was found between the neuroticism personality type and any teaching style ($p>0.05$). However, a positive relationship was identified with authoritarian ($r=0.026$) and advising ($r=0.024$) teaching styles, and a negative relationship was found with information-conveying ($r=-0.039$), personal ($r=-0.011$), and guiding ($r=-0.111$) teaching styles.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

The study shows that Turkish language teachers predominantly prefer student-centered teaching styles. This tendency may be influenced by the constructivist approach, which has become the core focus of education. The prominence of the guiding teaching style in the study's findings is consistent with the results of previous studies conducted by Süral (2013), Babadoğan, Kassenova & Karaşahinoğlu (2014), and Dinçer et al. (2017).

According to the average scores obtained, Turkish language teachers exhibited positive personality traits in the personality types of agreeableness, openness to experience, extroversion, and conscientiousness. On the other hand, they displayed negative personality traits in the neuroticism personality type. The fact that Turkish language teachers demonstrated positive traits in agreeableness indicates that they are reliable, tolerant, and cooperative, and can easily adapt to new situations. In addition, Hellriegel and Slocum (2009) state that individuals with a compatible personality type have better communication skills. Their openness to experience suggests that they are receptive to new and constructive ideas, have a rich imagination, approach events and situations from different perspectives, and are willing to change their thoughts in response to new information and experiences. Teachers who are open to development are more likely to adapt to the technological conditions of the evolving world and make necessary adjustments and updates in their educational methods, thereby creating more effective learning environments (Van der Linden et al., 2010). Positive traits in extroversion imply that Turkish language teachers are confident individuals with strong communication skills and a proactive attitude. Their positive traits in conscientiousness reflect that they are responsible in their professional lives, follow the plans and programs they prepare or those provided by the ministry, and demonstrate determination and perseverance. The negative traits in neuroticism suggest that Turkish language teachers are emotionally stable and not prone to emotional inconsistency. It is stated that individuals with high levels of neuroticism experience more stress in the face of daily events, while individuals with low levels of neuroticism are calm and well-adjusted (Burger, 2019). Teachers with low scores in neuroticism are calm, optimistic, and free from negative outlooks, which is considered beneficial for the educational environment. Emotionally unstable and aggressive individuals can create an insecure environment, reducing the overall efficiency of the working environment (Barrick et al., 2001). These findings are consistent with the results obtained in studies conducted by Yıldızoğlu & Burgaz (2014), Atmaca (2020), and Göksal (2022).

While no significant relationship was found between gender and the teaching styles of information provider, authoritarian, and advisor, a significant relationship was found in favor of female teachers in the

personal and guiding teaching styles. This result suggests that female teachers are more inclined than male teachers to act as role models by helping students understand their strengths and areas for development. This tendency may stem from the fact that women teachers grow up learning to behave differently in terms of communication preferences and perspectives on child rearing from the early years of their lives, and that they see the teaching profession as an extension of their maternal instinct (Goldenberg & Goldenberg, 2008; Ünal, 2008). These findings align with those reported in studies by Lloyd (2002), Süral (2010), and Saracaloğlu et al. (2011). When examining the personality types of Turkish language teachers in terms of gender differences, significant relationships were found in favor of female teachers in the personality types of extroversion and conscientiousness. This finding indicates that female teachers are more outgoing, confident, responsible, and determined than male teachers. This situation may be attributed to female teachers' more professional approach to their work. These findings are consistent with the results obtained by Demirci (2003) and Oktay (2007).

Although no significant relationship was found between the teaching styles of Turkish language teachers and the variables of age and seniority, it was observed that teachers with lower age and years of service generally had higher average scores in teaching styles. This may be because younger teachers are more likely to have received training on different teaching styles due to the evolving understanding of education or because they can more easily adapt to these changes. These findings are consistent with the results of studies conducted by Üredi (2006), Mutluoğlu (2012), Ağgez (2015), and Dilekli (2015). Similarly, no significant relationship was found between the personality types of Turkish language teachers and the variables of age and seniority. However, younger teachers generally achieved higher average scores in the personality types of openness to experience, agreeableness, and extroversion than other age and seniority groups. This may be because younger teachers have developed themselves more in areas such as social interaction, communication skills, and adaptability to innovation than teachers in other age and seniority groups. These findings are consistent with the results reported by Sav (2007), Sevgi (2017), Aydın, Canavar & İşlek (2021), and Ünsal and İhtiyaroğlu (2022).

When examining the relationship between the teaching styles and personality types of Turkish language teachers, no significant relationship was found between the neuroticism personality type and any of the teaching styles. However, a positive and significant relationship was found between the other personality types and teaching styles. This finding indicates that teachers who exhibit extroversion, agreeableness, conscientiousness, and openness to experience are more likely to prefer the teaching styles of information provider, authoritarian, personal, guiding, and advisor. Since this relationship is positive, an increase in the related personality trait also increases the preference for the associated teaching style. Teachers' having positive personality types and teaching styles affect students' attitudes towards the lesson, learning, participation and academic achievement (McCollin, 2000; Valencic, 2001; Wentzel, 2002). On the other hand, the negative relationship between the neuroticism personality type and the teaching styles of information provider, personal, and guiding suggests that as neuroticism increases, the tendency to adopt these three teaching styles decreases or vice versa. In this context, it can be concluded that teachers' emotional stability influences their behavior in learning environments, such as being a source of information, serving as a role model, and acting as a guide. This situation may affect the efficiency of learning environments and student motivation (Pavlovic, Stanisavljevic-Petrovic & Injac, 2017). These findings are consistent with the results obtained in studies conducted by Büyükuysal (2016), Eser (2017), Sevgi (2017), and Baş (2018).

Based on the results obtained from the research, the suggestions put forward by the researchers are listed below:

- The effect of teachers/students' personality types or teaching/learning styles on students' interests, attitudes or academic achievements towards the relevant course can be investigated. More scientific research needs to be done to delve deeper into the relationship between personality types and teaching styles.
- Pre-service training programs should be organized so that pre-service training programs

can develop teaching styles suitable for the personality characteristics of teacher candidates.

- Professional cooperation environments should be encouraged among teachers where different experiences will be shared according to their personality types.
- Technological tools that will support teaching processes in accordance with personality types should be developed and introduced.

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An Examination of Social Studies Teachers' Views on Environmental Education Themed Activities in Textbooks[1]

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ABSTRACT

This study aims to examine teachers' views on environmental education themed activities in social studies textbooks. The study was conducted using a basic qualitative research design, and data were collected through a semi-structured interview form prepared by the researchers. The study group consists of 17 social studies teachers who agreed to participate voluntarily in the 2023-2024 academic year in Mersin province. The data were analyzed using content analysis, presented in tables according to themes and code, and interpreted. As a result of the study, teachers expressed that the environmental education-themed activities in the textbooks were insufficient. Teachers stated that the activities in the textbooks should be updated in accordance with the principle of learning by doing, student level, and the principle of near to far, and that the number of activities should be increased. Additionally, they indicated that they implemented alternative activities such as environmental cleaning work, afforestation activities, zero waste and recycling activities, showing documentaries and videos about the environment, field trips for environmental awareness, and value teaching activities. Based on these results, it can be recommended to increase the number of activities in the textbooks and update them by considering teachers' opinions.

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INTRODUCTION

The increase in needs due to rapid population growth leads to greater and unconscious consumption of natural resources. The unconscious consumption of natural resources disrupts the ecological balance, giving rise to environmental problems that are difficult to compensate for. The increasing environmental issues that threaten living beings emphasize the importance of raising environmentally conscious and responsible individuals. The deterioration of ecological balance due to the increase in environmental problems has accelerated the search for solutions to these issues. As a result, educators have made efforts to raise awareness and instill responsibility in individuals through education to prevent environmental problems that directly affect all living beings on a global scale (Çoban & Temir, 2018). Environmental education is one of the most effective solutions in preventing environmental problems. The aim of environmental education is to cultivate individuals who have acquired positive attitudes and behaviors towards the environment and can actively participate in solving environmental problems, rather than merely conveying theoretical knowledge (Şimşekli, 2004). It is through environmental education that individuals can actively participate in solving environmental problems and develop environmental awareness. It is extremely important to raise individuals who have gained awareness of environmental issues and contribute to solving problems for a sustainable environment. Therefore, environmental education needs to be included in the curriculum at all levels (Marpa, 2020).

Environmental education aims for individuals to acquire knowledge, gain skills, and actively participate in solving environmental problems (Carleton-Hug & Hug, 2010; Demir & Yalçın, 2014). The increase in environmental awareness along with environmental knowledge and the emergence of positive behavioral changes towards the environment in individuals is an indication that environmental education has achieved its purpose (Kıralioğlu & Ürey, 2023). To prevent environmental problems, individuals should be equipped with environmental literacy skills through effective environmental education (Atabek-Yiğit, et al. 2014). Environmental literacy is the ability to possess basic knowledge about the environment, comprehend problems, and take necessary measures to solve these problems. Environmental literacy skills, which consist of three levels: nominal (knowledge level), functional (comprehension level), and operational (application level), when acquired especially at the operational level, will contribute to individuals taking responsibility in solving environmental problems and developing environmentally friendly behavior (Roth, 1992). Indeed, in the Tbilisi Declaration, which contains the decisions of the environmental education conference held by United Nations Educational, Scientific and Cultural Organization [UNESCO] in 1977, the purpose of environmental education was defined as developing environmental awareness in individuals, instilling attitudes and responsibilities towards the environment, and raising individuals who can participate in solving environmental problems in society (Dere & Çinikaya, 2023a).

It is stated that school and classroom environments are important for individuals to acquire environmental literacy skills and for the knowledge they acquire to be transformed into behavior (Tanrıverdi, 2009). From this perspective, it can be said that the social studies course, which has an interdisciplinary structure and aims to raise responsible individuals with civic consciousness, has an important place in environmental education (Turan & Koç, 2021). Considering the objectives, learning outcomes, and skills of the social studies course, it aims to raise individuals with a high environmental awareness who possess a sustainable environmental understanding. Indeed, when examining the specific objectives of the social studies curriculum, it is observed that students are intended to be aware of resource limitations, sensitive to the environment, striving to protect natural resources, and have a sustainable environmental understanding (Ministry of National Education [MoNE], 2018). One of the purposes of teaching social studies in schools is to raise individuals who have acquired the knowledge, skills, and values required for environmental literacy and who can play an active role in solving environmental problems (Büken & Katılmış, 2022).

Textbooks and activities, which are the primary resources for the course and guides for teachers, play a crucial role in raising awareness about environmental issues among students, attracting students' interest to the lesson, and facilitating active learning. Textbooks are important materials that can be effectively used to provide effective environmental education and impart skills to students within the scope of the social studies course. The study conducted by Ergin (2011) concluded that social studies teachers primarily use textbooks as their main resource within the scope of environmental education. Therefore, as expressed in the objectives of the social studies course, textbooks need to have rich content and activities related to environmental education in order to provide students with effective environmental education (Özdemir & Gökçe, 2019). Indeed, in the curriculum for environmental education and climate change course, it is stated that activities and practices in which students actively participate should be carried out within the scope of the course to raise individuals who are sensitive and responsible towards the environment (Ministry of National Education [MoNE], 2022). From this perspective, in order to provide students with environmental literacy skills, teachers need to implement a planned environmental education and the activities designed within this scope should be prepared and applied in accordance with the intended purpose (Chao, 2024).

The most effective way to instill environmental consciousness in students is through practice-based environmental education (Tanrıverdi, 2009). When relevant studies are examined, it is concluded that activity-based environmental education is effective in developing environmental awareness in students, influencing their attitudes towards the environment, and fostering a sense of responsibility (Aslan & Bulut, 2021; Bozkurt, 2018; Çiftçi, 2019; Ergin, 2011; Gülhan & Yurdatapan, 2014; Kurokawa et al., 2023; Ramos, Radrigues & Rodrigues, 2024; Tırpancı, 2019). In activity-based learning environments, students actively participate in the teaching process instead of being passive listeners (Anwer, 2019). Activity-based teaching allows students to gain experience through active participation in the lesson. By enabling students to think multi-dimensionally, permanent and effective learning takes place instead of memorizing information (Bozkurt, 2018). For learning to occur effectively, activities and materials must be appropriate for the student's level. Activities also increase students' motivation towards the lesson and encourage them to solve problems with their own competencies by arousing curiosity (Batdı, 2014). The study conducted by Anwer (2019) concluded that activity-based teaching had a positive impact on students' motivation towards the course and their academic skills. Additionally, it was stated that teachers have important responsibilities in order for activity-based teaching to achieve its intended purpose. Therefore, determining the opinions of social studies teachers regarding the environmental education-themed activities in textbooks and taking necessary measures based on the obtained results are important for achieving the goal of environmental education provided within the scope of social studies courses.

In the literature, it is observed that studies have been conducted examining social studies textbooks in the context of environmental education (Çoban & Temir, 2018; Demir, 2022; Demirezen & Kaya, 2022; Karakuş & Şeyihoğlu, 2021; Özdemir & Gökçe, 2019; Şeker, 2024), as well as analyzing environmental education and climate change course curricula and learning outcomes (Dere & Çinikaya, 2023b; Er & Yılar, 2024). Additionally, studies have been carried out to investigate teachers' views on environmental education (Altınok, 2021; Erdoğan, 2016; Ergin, 2011), their perspectives on environmental literacy skills (Büken & Katılmış, 2022; Çinikaya, 2022; Şimşek & Yıldırım, 2020), and their environmental education self-efficacy levels (Apaydın-Timur, 2020). However, no studies have been found examining social studies teachers' views on the activities in textbooks and the implementation of these activities. Considering the importance of social studies courses in terms of environmental education, it is thought that examining social studies teachers' views on activities and their implementation will contribute to activity-based environmental education, the development of environmental education-themed activities, and the relevant literature for effective environmental education.

In this research, the aim was to examine teachers' views on environmental education-themed activities in social studies textbooks, and answers were sought to the following questions:

1. What are the teachers' views on the adequacy of the activities?

2. What are the teachers' views on the implementation of the activities?

3. What are the teachers' suggestions for improving the activities?

4. What are the teachers' views on using alternative activities and methods other than those in the textbooks?

METHOD

Research Design

This research was conducted using phenomenology, one of the qualitative research methods. Qualitative research, which employs methods such as interviews, observations, and document analysis for data collection, allows for revealing how individuals interpret their experiences and events (Merriam, 2013). Phenomenology aims to investigate situations about which detailed information is not available and assumptions cannot be made. This approach can be used to examine attitudes, experiences, and opinions related to a specific event (Yıldırım & Şimşek, 2016).

Research Study Group

The study group of the research consists of 17 social studies teachers who work in Mersin province during the 2023-2024 academic year and agreed to participate in the study based on the principle of volunteerism. The snowball sampling method, one of the purposive sampling methods, was used to determine the teachers forming the study group. The snowball sampling method is effective in identifying individuals who may have rich information about the problem. This allows the researcher to have the opportunity to access more information on the subject (Yıldırım & Şimşek, 2016). Care was taken to ensure that the participants in the study group worked in different middle schools, had varying years of professional experience, and had taught social studies classes at each grade level. The demographic information of the study group is presented in Table 1.

Table 1. *Information about the study group*

		N	%
Gender	Female	6	35,29
	Male	11	64,71
Total		**17**	**100**
Professional Experience (Years)	1-5	3	17,65
	6-10	1	5,88
	10-15	6	35,30
	16-20	2	11,76
	21 and above	5	29,41
Total		**17**	**100**

When Table 1 is examined, it can be seen that the teachers forming the study group have different years of professional experience. Additionally, it can be stated that the majority of the study group (35.30%) consists of teachers with 10-15 years of professional experience.

Research Instruments and Processes

Data were collected using a semi-structured interview form consisting of 7 open-ended questions prepared by the researchers. During the process of preparing the data collection tool, expert opinions were obtained from 3 faculty members working in the department of social studies education. Based on the correction suggestions determined by experts, necessary adjustments were made to the questions in terms of scope and language expression, and after conducting a pilot application with a teacher, the interview

form was finalized. Before proceeding to the interview phase with participants within the scope of the research, necessary information about the study was provided, participants were asked to decide on their participation based on the principle of voluntariness, and it was stated that they could terminate the interview at any stage of the study without giving a reason. The interviews were conducted at the place and time jointly determined by the participants and the researcher. The interviews were conducted face-to-face with the teachers and lasted between a minimum of 32 minutes and a maximum of 90 minutes. The answers given by the participants to the questions were noted by the researcher. During the interview, participants were asked to elaborate on their answers to the questions. At the end of the interview, the answers given by the participants were presented for their approval, and the accuracy of the responses was confirmed. Ethical approval for this research was obtained from the Human Research Ethics Committee of Aksaray University with the decision dated 28/02/2023 and numbered 2023/01-34.

Data Analysis

The research data were analyzed using content analysis. In content analysis, direct quotes from the interviewees' ideas are included, and the findings are interpreted and conveyed in an organized manner (Yıldırım & Şimşek, 2016). Through the analysis of the data obtained, themes and code were identified. The data were presented in tables according to themes and code and interpreted (Creswell, 2016). Disagreements between coders were resolved through joint discussions, and the analysis was conducted based on the agreed-upon codes. During the reliability phase, the data obtained were examined in terms of codes and themes, and codes and themes with consensus were identified. At this stage, the review and evaluations of a field expert were also obtained. It is stated that in qualitative research, it is important for reliability to have the data examined by multiple coders and to compare the results to reach a consensus (Creswell, 2016). The formula "Agreement / (Agreement + Disagreement)" by Miles and Huberman (1994) was used to compare the codes and themes obtained. The calculated reliability value was found to be 87%. Additionally, to increase validity, participants' views were included. To maintain the confidentiality of participants' personal information, codes such as T1, T2, T3, …….T17 were used when conveying participant views.

FINDINGS

The findings regarding social studies teachers' opinions on whether they find the activities sufficient are presented in Table 2.

Table 2. *Teachers' opinions on the adequacy of activities in textbooks*

Theme	Code	f
Opinions on the adequacy of activities	Insufficient	15
	Sufficient	1
	No opinion (undecided)	1

When Table 2 is examined, 88.24% of teachers stated that the activities in textbooks are inadequate in providing students with environmental literacy skills within the scope of environmental education. Examples of teachers' opinions are given below:

"I think the activities in textbooks are insufficient. The content of environmental education topics requires out-of-class implementation*, but this is not possible. I can say that there are not enough in-class application activities in the books" (T5).*

"The activities included in textbooks are insufficient. There is more emphasis on topic explanations and theoretical information*. Textbooks should contain activities that allow students to actively participate and engage in group work" (T7).*

"Textbooks are not sufficient in terms of providing students with environmental literacy skills. Since the activities in the books *are insufficient, we try to do alternative activities. However, there is not enough information about environmental education in the books" (T12).*

"The activities in textbooks are not sufficient in providing students with environmental literacy skills. Activities need to be appropriate for children's level. We do different activities considering the students' interest and the class situation" (T16).

"The activities in the textbook are insufficient. Textbooks contain more theoretical information. The number of activities needs *to be increased, and the activities need to be more practice-oriented" (T6).*

According to direct quotes from teachers and Table 2, it can be said that the activities in textbooks are insufficient in providing skills to students. Furthermore, teachers state that the activities in textbooks are not at a level that would attract students' interest and are not suitable for classroom implementation.

The findings related to social studies teachers' views on implementing activities are presented in Table 3

Table 3. *Teachers' views on implementing activities included in textbooks*

Theme	Code	f
Opinions on the implementation of activities found in textbooks during lessons	Positive	13
	Negative	4

When Table 3 is examined, it is observed that 76.47% of teachers find the implementation of activities in textbooks during lessons to be positive, while 23.53% express negative opinions regarding the application of activities in class. Examples of teachers' views are given below:

"I don't think assigning *activities as homework will be effective. Therefore, I try to implement the activities in the classroom" (T4).*

"I believe that assigning *activities as homework will instill a sense of responsibility in students. However, students are having difficulty understanding the activities. For this reason, I try to implement the activities I assign as homework again in the classroom" (T15).*

"Implementing the activities from textbooks during the lesson is more effective. When given as homework, students don't *show the necessary care for the activities" (T14).*

"We don't have enough time to implement the activities in class. I have to assign the activities as homework, but the students *can't complete them in accordance with their intended purpose" (T10).*

According to direct quotes from teachers and Table 3, it is observed that the number of teachers (f=13) who implement the activities in textbooks during lessons is higher than those who do not (f=4). Teachers who apply these activities during class have stated that activities implemented in this manner are more productive and effective. However, teachers who reported trying to implement activities by assigning them as homework expressed that they give these activities as homework due to insufficient time during the lesson.

The findings regarding social studies teachers' suggestions for improving activities are presented in Table 4.

Table 4. *Teachers' suggestions for improving activities in textbooks*

Theme	Code	Participants	f
Suggestions for improving activities	It should be appropriate for the student's level	T4, T8, T13, T14, T15	5
	It should be fun and capture the student's interest	T4	1
	Visual elements should be emphasized	T2, T6	2
	Current data and examples should be included	T6, T7	2
	It should be in accordance with the principle of learning by doing and experiencing	T1, T3, T4, T5, T8, T9, T10, T11, T12, T16, T17	11
	Activities should be simple and understandable	T15	1

	It should comply with the principle of near to far	T3, T8, T10, T11	4
	Practical activities outside the classroom should be included	T3	1

When Table 4 is examined, teachers' suggestions for improving activities are concentrated on "Activities should be in line with the principle of learning by doing and experiencing (f 11)", "Should be appropriate for student level (f 5)", and "Should adhere to the principle of near to far (f 4)". However, it has been found that suggestions such as emphasizing visual elements, including current data and examples, and incorporating out-of-class practical activities remain limited. Examples of teachers' views are provided below:

"Activities should be understandable and applicable by students. Instead of activities containing theoretical knowledge, there should be activities where students can practice, participate, and learn while having fun during the application *process" (T4).*

"Activities should include engaging and attention-grabbing elements such as visuals, graphics, and tables. Examples given in activities should be current. Textbooks should also be updated to include current data and information in activities*" (T6).*

"Activities should be appropriate for the student level and designed in a way that students can adapt to their daily lives. They should *adhere to the principle of near to far" (T8).*

"Activities should be designed in a way that students are active and can produce something. They should be focused on knowledge *and skills" (T11).*

"Care should be taken to ensure that activities are understandable. Particularly for 5th grade students, there should be more concrete activities, and the activities should be diversified" (T15).

Based on the direct quotes from teachers' opinions and Table 4, it can be said that the activities in textbooks need to be improved. Teachers' views primarily focus on the need for textbook activities to be appropriate for student levels, and that activities should be developed in a way that captures students' interest and aligns with the principle of learning by doing and experiencing.

Findings related to social studies teachers' views on activities and methods they use outside of textbooks are presented in Table 5.

Table 5. *Alternative activities and methods used by teachers outside of those included in textbooks*

Theme	Code	Participants	f
Views on using alternative activities and methods	Environmental cleaning, tree planting activities, zero waste and recycling initiatives	T1, T2, T4, T5, T6, T7, T8, T9, T11, T13, T14, T15	12
	Trips within the scope of environmental awareness	T3, T4, T10	3
	Project preparation and project assignments	T4, T6, T17	3
	Value education activities	T5, T11, T14	3
	Visit to environmental institutions and organizations	T8	1
	Documentary and video screening event about the environment	T6, T10, T13, T14, T17	5
	Instructional practices through presentation	T14, T17	2

When Table 5 is examined, it is observed that within the scope of environmental education, 12 teachers stated that they used environmental cleaning activities, tree planting events, zero waste and recycling activities; 5 teachers used documentary and video screenings related to the environment; 3 teachers used field trips within the scope of environmental awareness; and 3 teachers used value teaching activities. It is seen that project preparation, visits to institutions and organizations, and teaching through presentations are other activities and methods used by teachers. Examples of teacher opinions are given below:

"I conduct environmental cleaning activities in the schoolyard. I organize tree planting activities through the TEMA Foundation*" (T2).*

"I explain the importance of conservation to students. I conduct tree planting activities and recycling activities using waste materials*" (T5).*

"We carry out tree planting *activities. We did an activity related to street animals, and the students showed interest in this activity. We visited institutions that operate in environmental matters" (T8).*

"In my classes, I talk about the importance of conservation. I try to set an example for the students" (T11).

"I try to create awareness *about environmental issues among students by showing documentaries and videos related to environmental problems. We conduct activities on environmental cleanliness" (T13).*

According to direct quotes from teachers and Table 5, it can be said that teachers implement alternative activities and practices in addition to those found in textbooks within the scope of environmental education. When examining teachers' opinions, it is observed that these practices and activities are predominantly focused on environmental cleaning efforts, tree planting activities, zero waste and recycling initiatives, as well as documentary and video screenings aimed at raising awareness among students.

DISCUSSION, CONCLUSION & RECOMMENDATIONS

This study, conducted to examine social studies teachers' views on environmental education-themed activities in textbooks, concluded that the activities were inadequate based on the teachers' responses. Considering this result and the findings of similar studies (Altınok, 2021; Büken & Katılmış, 2022; Karakuş & Şeyihoğlu, 2021; Özdemir & Gökçe, 2019), it can be said that the activities in social studies textbooks are insufficient in imparting environmental literacy skills to students in the context of environmental education. Indeed, the study conducted by Demir (2022) concluded that textbooks mostly contain knowledge-level topics related to environmental education, while activities that would activate students' psychomotor skills were not adequate. Furthermore, Öztürk and Öğreten (2017) concluded in their study that the activities in social studies textbooks were inadequate in imparting skills to students. Similarly, the study conducted by Şeker (2024) indicates that social studies textbooks are inadequate in meeting the objectives of the curriculum within the scope of environmental education, and that the visuals and activities in the textbooks do not take into account students' learning styles and individual differences. The study conducted by Demirezen and Kaya (2022) suggested that textbooks should include more practical activities focused on environmental education. It is thought that teachers' views of textbook activities as inadequate are influenced by the fact that the activities are not planned in a way that would attract students' interest in the lesson and allow them to actively participate in the activities.

As a result of examining teachers' opinions on the implementation of activities, it was determined that 76.47% of teachers applied the activities in class, while 23.53% could not apply them in class. Additionally, teachers stated that implementing activities in class increased students' motivation towards the lesson. Similarly, a study conducted by Gürbüz and Kışoğlu (2017) found that environmental education supported by in-class activities increased students' interest in the lesson. Considering that activity-based teaching is effective in developing skills in students (Anwer, 2019), it can be said that implementing environmental education activities in the classroom environment is more effective in terms of providing students with environmental literacy skills. Research conducted by Al Shloul et al. (2024) indicates that activity-based teaching positively affects students' learning motivation, class participation, and academic achievement. Additionally, it is stated that this approach improves critical thinking and literacy skills.

Teachers have expressed that activities in textbooks should be planned and developed considering factors such as their appropriateness to student levels and the principle of learning by doing and experiencing. Fidan, Çelen, and Kanat (2018) concluded in their study that activities in textbooks need to be improved. Moreover, it is stated that activity-based teaching, where students are active in

environmental education, is effective in fostering environmental sensitivity and responsibility (Çiftçi, 2019). Similarly, a study conducted by Tırpancı (2019) concluded that activity-based environmental education, in which students actively participate, is effective in creating environmental awareness. Therefore, for effective environmental education, it can be said that planning activities in textbooks by considering principles such as level appropriateness, learning by doing and experiencing, and moving from near to far, as well as ensuring students' active participation in activities, is important in achieving the desired goals in environmental education. Indeed, Kocagul (2024) states that for designing effective learning environments, activities should be planned considering students' developmental characteristics, and should be engaging and encouraging student participation. Additionally, he emphasizes the importance of student-teacher interaction in the implementation of activities.

The teachers participating in the research stated that they tried to develop environmental literacy skills by conducting alternative activities in which students could actively participate, apart from the activities in the textbooks. It is thought that the inadequacy of the activities in the textbooks was influential in the emergence of this result (Table 2). The study conducted by Malkoç (2014) concluded that teachers carry out alternative activities in out-of-classroom school environments as it provides an opportunity for permanent learning and learning by doing for students. The study conducted by Büken and Katılmış (2022) states that teachers should use different methods and activities within the scope of environmental education and carry out field trip and observation activities. Similarly, the study conducted by Kıralioğlu and Ürey (2023) emphasized the importance of implementing out-of-school learning activities within the scope of environmental education. The study conducted by Aslan and Bulut (2021) concluded that activity-based teaching is effective in developing environmental literacy skills in students. Considering the importance of activity-based teaching in environmental education and taking into account teachers' opinions, it is possible to say that the activities in social studies textbooks are inadequate in providing students with environmental literacy skills.

As a result of the research, it was concluded that teachers found the activities insufficient and that the activities should be developed in a way that students can learn by doing and experiencing. Additionally, it was determined that teachers tried to help students acquire environmental literacy skills by conducting alternative activities and applications besides those in the textbooks. Within the framework of these results:

- The number of environmental education-themed activities in textbooks should be increased.
- Textbooks should include activities that will attract students' interest and enable their active participation.
- Teachers should be provided with administrative and financial support to conduct original activities and applications both inside and outside the school.
- Teachers' opinions on preparing and implementing environmental education activities can be examined.

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A Bibliometric Analysis of Creative Drama Studies in Education

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ABSTRACT

The aim of this study is to examine the studies on creative drama in education with bibliometric analysis method. The studies constituting the data of the study were obtained from Dimensions, WoS, Scopus and PubMed databases. For this purpose, an extended search was made with the words "creative drama" and "education" and 329 studies were combined in the R program. The combined data were filtered with the Biblioshiny package to consist only of articles in English and Turkish languages and the final number of studies to be analyzed was determined as 87. According to the findings obtained in the research; the year in which the most articles were produced between 1983 and 2024 was determined as 2022. The most cited authors were Hendrix, Eick and Shannon, while the most cited journal was Education and Science. The most used keywords in the studies were education, human, child and drama, and it was concluded that the trend in the studies was in the direction of education, human and women-themed studies. It is thought that this study will provide a general perspective to individuals and researchers interested in the field of creative drama in education. In this study, only article type studies were analyzed. In future studies, different types of studies can be analyzed.

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INTRODUCTION

Children observe and imitate their environment throughout their development. Although Biesta (2008) states in his study that education consists of a complex structure and it is difficult to delimit its purpose, preparing students for life is one of the most comprehensive goals of education. Although educators benefit from children's observations and imitations, the educational environment may sometimes not be directly related to life. Sometimes teaching is carried out through textbooks and sometimes through the materials used. This can create difficulties in creating a connection between what students learn and practice. Various teaching methods are used by educators to create a strong bridge between practice and knowledge. Creative drama is one of these methods.

Today, drama is used in the meanings of "a play played to be written on stage" or "a pathetic event" (TDK, 2025). When the origin of the word is examined, it dates to ancient Greek history and has a general meaning that covers the works of movement and action (Adıgüzel, 2006). The concept of creativity deals with the production of the individual. Creativity is the encounter of a person whose consciousness is concentrated with his/her own world (May, 1988 p.76). The reconstruction of moments from daily life by experts in a drama environment is defined as creative drama (San, 1990). Although creative drama benefits from theater methods, it differs from theater by not having the necessity of text and scenario (Adıgüzel, 2006). The use of creative drama in education brings the educational process closer to life and offers students the opportunity to experience life scenarios and develop their own creativity (Annarella, 1992; Hendrix, et al. 2012; San, 1990). Through creative drama, students gain skills such as generating solutions to problems, empathy, cooperation and transforming ideas into action (Pinciotti, 1993).

Thanks to its versatile nature, creative drama has been the subject of studies in many disciplines of educational research. In the field of mathematics education (Borlat, 2018; Coleman & Davies, 2018; Duran, 2022), science education (Aubusson & Fogwill, 2006; Çokadar & Yılmaz, 2010; Danckwardt, et al. 2018; Dorion, 2009; Ong et al., 2020; Walan & Enochsson, 2019), social studies education (Aykaç & Adıgüzel, 2011; Başbuğ & Adıgüzel, 2019; Öztürk & Sarı, 2018), language education (Brouillette, 2012; Korkut & Çelik, 2021; Mages, 2008; Sağlamel & Kayaoğlu, 2013).

The relationship between creative drama and many variables has been explored in the aforementioned educational fields. Examples of these variables include creative drama's relationship with individuals' self-efficacy perceptions (Arda Tuncdemir, 2025; Aykaç et al. 2019, Eyüp, 2023); creativity skills (Arda Tuncdemir, 2025; Athiemoolam, 2018), problem-solving skills (Felek, 2023), empathetic thinking skills (Malinina, 2024), communication skills (Dere, 2019), self-regulation skills (Yeterge et al. 2024); speaking and language skills (Tuxtasinova, 2025; Yildirim, 2023); and critical thinking skills (Ormancı & Sasmaz Oren, 2020). In addition, studies have also identified the positive effects of creative drama on facilitating learning and ensuring lasting impact in individuals (Batdi & Batdi, 2015; Kılınçaslan & Özdemir Şimşek, 2015). The use of drama education in positive sciences has been found to improve environmental skills (Aydın & Aykaç, 2016; Demir & Aslan, 2025); positively affect science process skills (İncesu et al., 2025; Dorion, 2009) and develop basic mathematical skills (Şahin & Aykaç, 2018). When considering the social benefits of creative drama, it has been found to help individuals understand gender roles (Baselga et al., 2022; O'Neill and Lambert, 1982; Şeren et al. 2025); positively alters emotional intelligence (Armesto Arias et al. 2025); is effective in preventing peer bullying (Goodwin et al. 2019); and enhances social skills (Freeman et al. 2003). Considering the positive impact that creative drama has on individuals in many situations, the importance of a general overview of research on creative drama in education becomes clear.

Llige and Escuadra (2024) conducted a bibliometric analysis of 2148 articles indexed in Web of Science and Scopus databases between 1970 and 2020 in the field of drama. Dawoud et al. (2020) conducted a bibliometric analysis of 35 articles on creative drama in English language education indexed in Web of Science, Science Direct and EBSCO databases between 2010 and 2019. Şengün and

İskenderoğlu (2010) conducted a bibliometric analysis of creative drama research in mathematics education.

In this study, unlike the studies mentioned above, a bibliometric study was conducted for all articles in the field of creative drama and education. The research aims to analyze creative drama articles in the field of education in a holistic manner. In line with this purpose, answers to the following questions were sought:

- How is the distribution of articles published on creative drama in education according to years?
- Which are the 10 most cited articles on creative drama in education?
- How is the reference link of the most cited authors in articles on creative drama in education?
- In which journals have articles on creative drama in education been published the most?
- What are the most used keywords in articles on creative drama in education?
- What is the relationship between the keywords used in articles on creative drama in education?

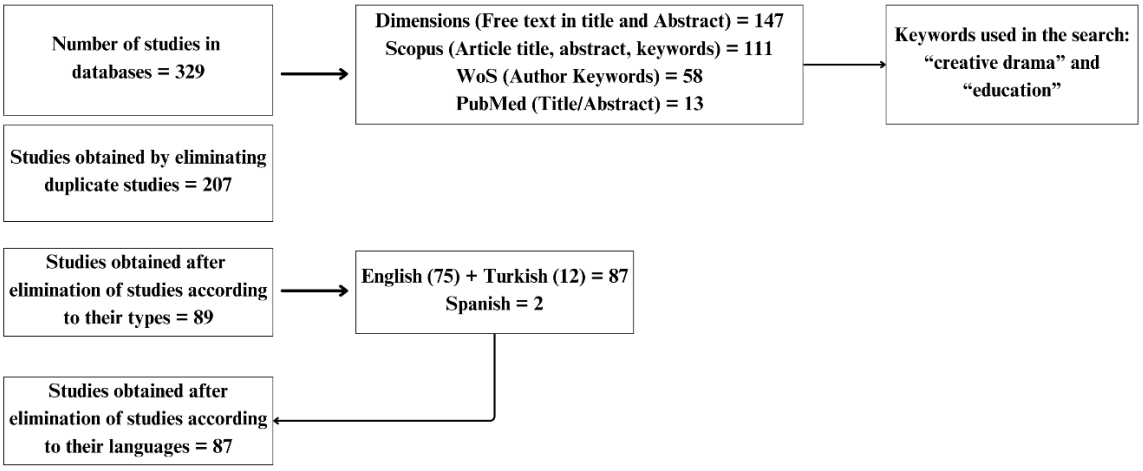
METHOD

This study aims to describe the articles on creative drama in the field of education. For this purpose, the research was designed with a bibliometric analysis method. Bibliometric analysis aims to examine the studies in a particular field and to visualize the relationships between them by revealing the distribution by years, popular authors, institutions, and resources working on the subject, and in this direction, it is used to make sense of large-scale data on the subject, to observe and visualize its development (Aria & Cuccurullo, 2017; Donthu et al., 2021). For this purpose, articles published in Web of Science, Scopus, Dimensions, PubMed, which are databases supported by the R package program, were used as data.

Data Collection

The data of the research were obtained from the databases mentioned above and necessary searches and filtering were made in these databases. The steps of realization of these processes are presented below.

Figure 1. *Data collection process*



According to the data in Figure 1, English and Turkish articles obtained from Dimensions, Scopus, Web of Science (WoS) and PubMed databases on 22.01.2025 were used in the study. The keywords "creative drama" and "education" were used in all databases. The data obtained were transferred to the bibliometrix package of the R statistical program (Aria & Cuccurullo, 2017) and duplicate studies were extracted. As a result of the removal of duplicate data, 210 data were also checked with the Excel program before being analyzed, and 3 duplicate data were filtered a second time. Finally, 207 studies were uploaded to the analysis program, and English and Turkish studies were selected as the research type article and research language. The study was conducted with a total of 87 articles, 75 of which were in English and 12 of which were in Turkish.

FINDINGS

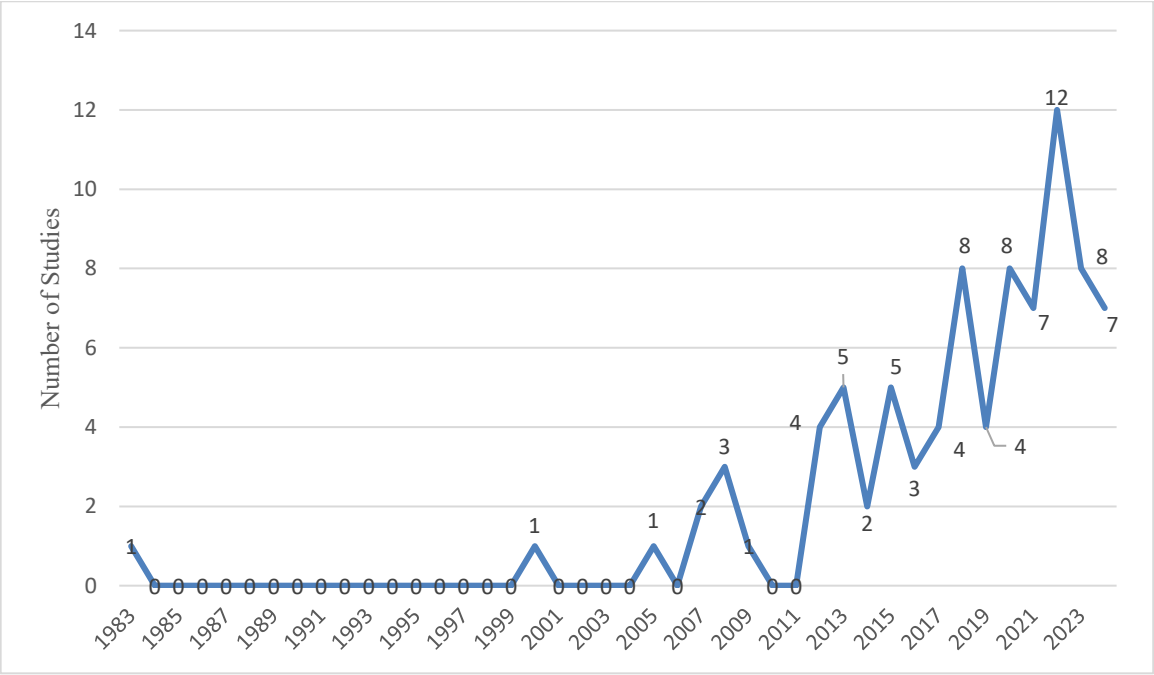
Table 1. *Overview of research data*

Category	Results
Time interval	1983-2024
Source	70
Document	87
Author	186
Single author documents	19
Average document	7.82

According to Table 1, articles searched in WoS, Scopus, Dimensions and PubMed with the keywords "creative drama" and "education" on 22.01.2025 were found in the range of 1983-2024. It was determined that the first study on creative drama published in these databases was in 1983. In this time period, there are 87 articles in the data set, which includes 70 different sources. While 186 authors worked on the subject, only 19 studies were prepared with a single author. When the distribution of 87 articles between the years of production is analyzed, it is determined that the average age of the research is 7.82 years.

In the databases analyzed in the figure below, the distribution of training studies on creative drama according to years is given.

Figure 2. *Distribution of studies by years*



According to Figure 2, studies on creative drama in education started with Rosenberg & Pinciotti's (1983) study. Until 2012, the number of studies in the field was limited, while the number of studies has increased since this year. The number of studies, which progressed in a fluctuating structure, experienced the highest number of studies with 12 studies in 2022. Although the first study was conducted in 1983, it is noteworthy that the number of studies has increased since 1999. The increase in the number of studies in a field increases as the effectiveness of the method used becomes apparent. The popularity of research on creative drama in education in the 2000's can also be explained by this reason.

In the table below, data on the 10 most cited studies on creative drama are presented.

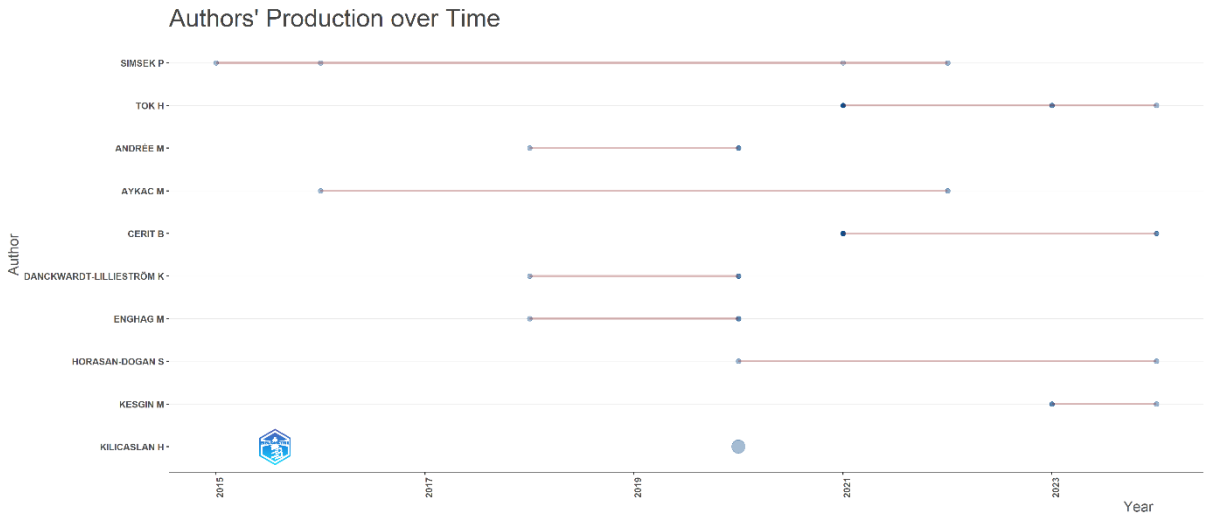
***Table 2**. Top 10 most cited studies*

Author and year of publication	Title of the study	Journal name	Number of citations
Hendrix, R., Eick, C., & Shannon, D., (2012)	"The Integration of Creative Drama in an Inquiry-Based Elementary Program: The Effect on Student Attitude and Conceptual Learning"	Journal of Science Teacher and Education	40
Mages, 2008	"Does Creative Drama Promote Language Development in Early Childhood? A Review of the Methods and Measures Employed in the Empirical Literature"	Review of Educational Research	35
Hui, A. N. N. N., Chow, B. W. Y., Chan, A. Y. T., Chui, B. H. T., & Sam, C. T. (2015).	"Creativity in Hong Kong classrooms: transition from a seriously formal pedagogy to informally playful learning"	Education 3-13	21
Erdogan, T. (2013).	"The Effect of Creative Drama Method on Pre-service Classroom Teachers' Writing Skills and Attitudes towards Writing"	Australian Journal of Teacher Education	19
Yücesan, E., & Şendurur, Y. (2017).	"Effects of music therapy, poetry therapy, and creative drama applications on self-esteem levels of college students"	Journal of Poetry Therapy	17
Furman, L. (2000).	"In support of drama in early childhood education, again"	Early Childhood Education Journal	17
Uzunöz, F. S., & Demirhan, G. (2017)	"The effect of creative drama on critical thinking in preservice physical education teachers"	Thinking Skills and Creativity	16
Tok, H. H., & Cerit, B. (2021).	"The effect of creative drama education on first-year undergraduate nursing student attitudes toward caring for dying patients"	Nurse Education Today	15
Ong, K.-J., Chou, Y.-C., Yang, D.-Y., & Lin, C.-C. (2020)	"Creative Drama in Science education: The Effects on Situational Interest, Career Interest, and Science-Related Attitudes of Science Majors and Non-Science Majors"	Eurasia Journal of Mathematics, Science and Technology Education	13
Davis, B. W. (1985)	"The impact of creative drama training on psychological states of older adults: An exploratory study"	The Gerontologist	13

According to the table above, it includes the most cited studies on creative drama in education, the number of citations of these studies, and the author and institution information of the studies. Hendrix, Eick and Shanon's study was the most cited study in the Journal of Science Teacher and Education with 40 citations. Hendrix, Eick, and Shannon (2012) found that the use of creative drama method in 4th and 5th grade science lessons positively affected students' learning outcomes.

In the table below, data on the productivity of the authors who wrote articles on creative drama according to years are given.

Figure 3*.Authors' productivity by years*



According to Figure 3, the number of studies of the authors who have the most studies in the field of creative drama in education was analyzed according to years. It was determined that Şimşek was the researcher with both the highest number of studies and the longest study interval with 4 studies. In the analyzed data sets, Şimşek's studies started in 2015 and continued at non-fixed intervals until 2022. While Tok was in the table with 3 studies, Kılıçarslan was the only researcher with more than one study in a year.

The following figure presents the citation network relationship between authors who produce research on creative drama.

Figure 4*. Citation network relationship between authors*

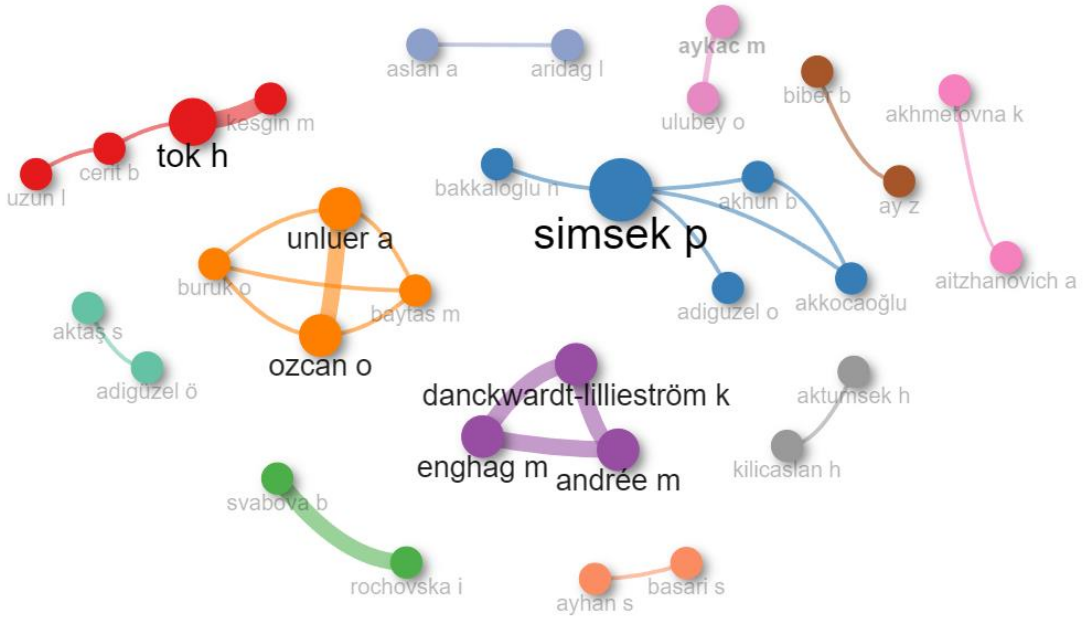


Figure 4 shows the reference relationship of the authors of articles on creative drama in education. While Şimşek is the researcher with the highest number of links, the clustering between Ünlüer, Özcan, Baytaş, Buruk and Danckwardt, Enghag, Andree draws attention.

The table below presents the journals that published the most research on creative drama.

Table 3. *Journals with the most studies published*

Journal Name	Number of Studies
Education and Science	6
Elementary Education Online	5
Journal of Education and Future	3
Nurse Education Today	3
Education 3-13	2
Eurasia Journal of Mathematics, Science and Technology Education	2
Journal of Baltic Science Education	2
Pamukkale University Journal of Education	2
Thinking Skills and Creativity	2
Ad Alta-Journal of Interdisciplinary Research	1

Table 3 lists the journals that published the most articles in the field of creative drama in education in the analyzed databases. While Education and Science is the journal with the highest number of studies published with 6 studies, Elementary education online was included in the table with 5 studies and Journal of Education and Future with 3 studies. All 3 journals at the top of the table include studies in the field of educational sciences.

The figure below presents the word cloud data of the creative drama-themed studies.

Figure 5.*Word cloud of creative drama-themed studies in education*

The word cloud created from keywords is a powerful visual resource that presents the orientation of the studies. The Biblioshiny package used to analyze the data offers two options: “author keywordsand “keywords +”. The keywords + option better reflects the content of the studies than the author keywords option (Zhang et al., 2016). In this study, 50 keywords were visualized with this option and a word cloud was created. When the word cloud was analyzed, the words commonly used in articles on creative drama in education were education, human, women, men, children and drama.

In the figure below, a figure showing the relationship between author keywords on creative drama is presented.

***Figure 6**. Author keywords relationship*

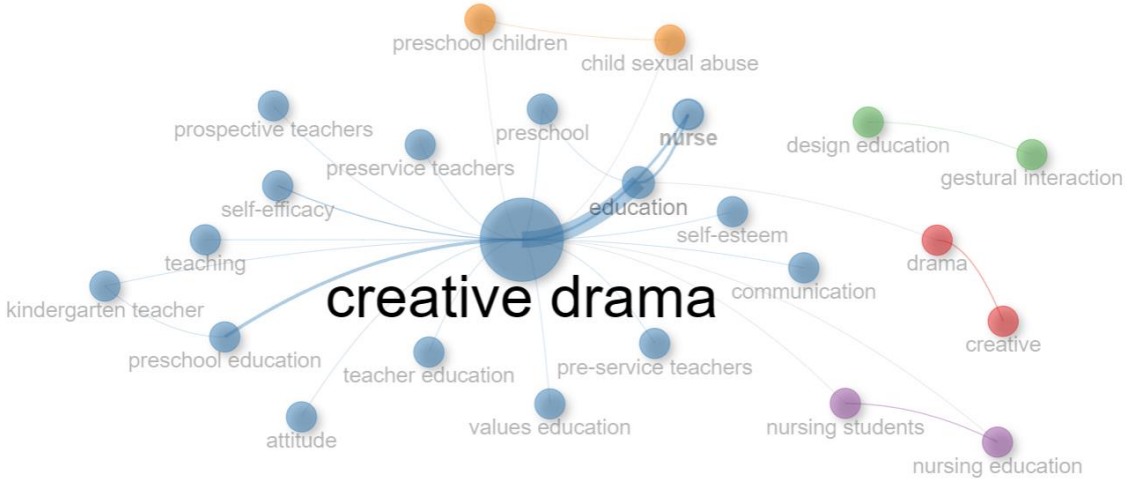


Figure 6 shows the relationship between author keywords in articles on creative drama in education. Author keywords help to create a conceptual framework of a topic (Aria & Cuccurullo, 2017). Accordingly, the figure above shows the existence of five different clusters. Among these clusters, the presence of creative drama keyword was found to be the highest in the blue cluster. In addition, different keywords such as teacher education, values education, education, pre-school education are also included in this cluster. When the clusters in other colors are examined, it is seen that they do not contain as many keywords as the blue cluster.

The thematic mapping analysis data of creative drama themed studies are presented in the table below.

***Figure 7**. Thematic map of creative drama studies in education*

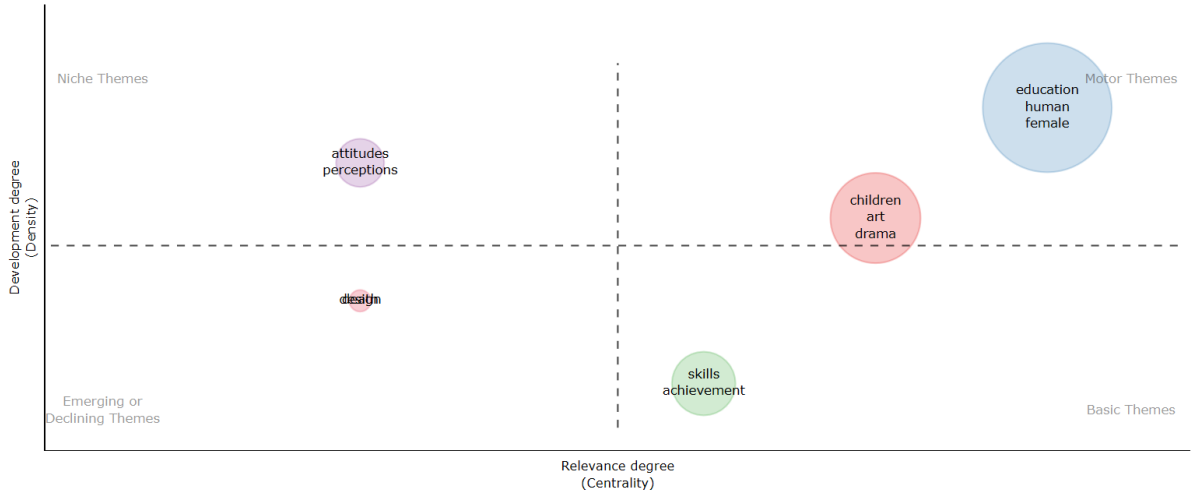


Figure 7 shows the thematic analysis of articles on creative drama in education. In the thematic analysis method, as the value increases on the x and y axis, it represents the upward trend in research, and as the value decreases, it represents the downward trend (Alkhammash, 2023). According to the analysis of the keywords+ option, the keywords education, human and women constitute the upward trend, while the keyword death constitutes the downward trend.

CONCLUSION and DISCUSSION

In this study, studies on creative drama in education obtained from WoS, Scopus, PubMed and Dimensions databases were analyzed by bibliometric method. When the distribution of the studies by years was analyzed, it was seen that the first study was conducted in 1983, but the increase in general was observed since 2012. The fact that the most studies were conducted in 2022 can be interpreted as the return to face-to-face education in the post-pandemic period. When the 10 most cited articles in the databases analyzed are listed, Hendrix, Eick, and Shannon's (2012) study takes the first place. In their study, they measured and reported the effectiveness of creative drama in science lessons. In the study, the authors who conducted the most studies, the reference relationships between these authors and the distribution of their studies according to years were examined. According to the data obtained, Şimşek was determined as the researcher with both the most studies and the most reference links. Danckwardt, et al. (2018) and Danckwardt, et al. (2020) draw attention in author connections with creative drama studies in chemistry education. Ünlüer and Özcan (2013) used creative drama with gestural interactions in their study and Ünlüer et al. (2018) investigated the effectiveness of mime-based education enriched with creative drama. These two studies constitute the link between the authors.

The articles examined in the study were analyzed according to the journals in which they were published the most, and according to the findings obtained, it was proved that the journal in which the most studies were published was Education and Science. The inclusion of Turkish articles in the analysis may have caused the journals in which the most studies were published to originate from Turkey. Çelik (2022) analyzed drama studies in education between 1975 and 2022 in the WoS database and found that Eğitim ve Bilim was the 6th journal with the highest number of studies and Turkey was the 5th country with the highest number of studies. Although Çelik's (2022) data and the data of this study are not the same, the fact that the databases examined and the filtering of the studies obtained by different methods may have caused this difference.

When the most used keywords in the studies are analyzed, the words education, human, women, men, children and drama come to the fore. Llige and Escuadra (2024) conducted a bibliometric analysis of drama studies using WoS and Scopus databases. In their word cloud analysis, the keyword “dramastands out. In addition, keywords such as education, women, human also constitute similar findings of the study. One of the findings of the study is thematic mapping analysis. According to the analysis, while articles on education, human and women are studied more in the field; articles on children, art and drama tend to increase.

The results of thematic mapping analysis show similarities with another result, namely that the most frequently used areas related to creative drama are education, preservice teacher training, preschool education, teacher education, nurse training, teaching, attitudes, values education, self-efficacy, communication, and self-esteem. The use of creative drama in education has been found to contribute to individuals' creativity skills (Arda Tuncdemir, 2025; Athiemoolam, 2018), speaking and language skills (Tuxtasinova, 2025; Yildirim, 2023), cognitive processes such as critical thinking (Ormancı & Sasmaz Oren, 2020), and emotional areas such as empathy, social skills, and communication (Dere, 2019; Freeman et al. 2003; Malinina, 2024) at all levels, from preschool education to teacher training. As the effectiveness of creative drama in teaching abstract concepts, skills, and values becomes more evident in early childhood education, which is the foundational level of education, it is expected that the number of studies incorporating creative drama in this age group will increase. Articles on death, on the other hand, are losing their trend according to the findings.

RECOMMENDATIONS

- The data for this study were obtained from Dimensions, WoS, Scopus and PubMed databases. Future studies can be conducted by searching different databases.

- In this study, only article type studies were analyzed. In future studies, different types of studies can be analyzed.
- In this study, only studies in English and Turkish were analyzed. In future studies, studies from other languages can also be analyzed.

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Teachers' Opinions with Hearing-Impaired Students on Distance Learning During COVID-19[1]

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ABSTRACT

This research aims to determine how the education of hearing-impaired students was planned with distance learning during the Covid-19 pandemic, how education-teaching activities are carried out, and what kind of problems are encountered in this regard, according to the opinions of teachers. Phenomenology, one of the qualitative research designs, was used in this study. The participants of the research were eighteen teachers who have hearing-impaired students in their class. The data were collected in the 2020-2021 academic year with the semi-structured interview technique. Data analysis was carried out with the descriptive analysis method. As a result, it was revealed that teachers having hearing-impaired students during the COVID-19 pandemic did not have enough experience in planning the distance learning activities provided for those students, using appropriate materials, choosing teaching methods, using technology effectively, determining the appropriate measurement and evaluation method, and using the communication system preferred by the students.

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INTRODUCTION

At the end of 2019, the coronavirus, which is an epidemic of COVID-19 caused by the SARS-CoV-2 virus in the city of Wuhan, China, went down in history as the first pandemic caused by viruses (Dikmen et al., 2020). World Health Organization (WHO) declared this epidemic disease to the whole world as a pandemic due to the rapid increase in the number of COVID-19 cases (WHO, 2020). As of March 27, 2020, the pandemic has affected more than 1.5 billion students and 63 million educators in 188 countries around the world due to school closures (UNESCO, 2020). The situation revealed that knowledge and learning should be rethought, and education should be protected and transformed (UNESCO Futures of Education, 2020).

Students with special educational needs were among the most affected by the COVID-19 pandemic due to factors such as limited attention spans, need for direct physical support, and challenges in motivation and memory retention (ETF, 2020; Kurt & Kurtoğlu-Erden, 2020; Lee, 2020). Students with hearing impairment require different communication methods and hearing aids depending on the type and degree of hearing loss. It may be difficult to meet the different requirements of different communication methods, such as sign language, lip reading, and verbal communication, through distance Education (Aslan-Bağcı & Sarı, 2024). In addition, one-to-one interactive behaviors such as eye contact, joint attention, and turn-taking, which are important for hearing-impaired students, are very difficult to gain through distance education. In addition, the use of subtitle options, the use of written and visual materials, and the use of supportive materials such as simulations, videos, and graphics in distance education environments can also be turned into advantages for hearing-impaired children. On the other hand, the educational needs of hearing-impaired children and the fact that the pandemic process has made distance education compulsory have also revealed some difficulties in distance education in Turkey, such as teacher competencies, infrastructure, and material deficiencies.

Türkiye Context

With the identification of the first positive case in Turkey on March 11, 2020, several regulations have been made in health services, social life, and educational practices, which has marked the beginning of a new era. In order to reduce the spread of the coronavirus epidemic throughout the country and to minimize its possible negative effects in terms of education, schools in Turkey were temporarily closed on March 16, 2020, and that was followed by the start of distance learning across the country (MEB, 2020a). In this way, the distance learning process of approximately 18 million students and one million teachers in Turkey began (Özer, 2020). During that period, emergency distance learning applications were introduced in Turkey and other countries in order to continue learning without any interruptions. The applications introduced in Turkey were over the internet, with Informatics Network (EBA) of the Ministry of National Education (MoNE), and via television, with a series of TV channels under the name of TRT EBA TV (MEB, 2020b).

During the pandemic, students need of special education services could not receive face-to-face education. However, they also were supported through distance learning and some additional mobile applications. The actions taken for children in need of special education in that process in Turkey, which were a mobile application named “Özelim Eğitimdeyim (I am Special, I Receive Education)”, a separate broadcast stream for children under special education on TRT EBA TV, and the production of a calendar named “Özel Çocuklarımızla Eğlenceli Etkinlikler Takvimi (Fun Events Calendar with Our Special Children)”, were explained by the Minister of National Education in a video conference with parents (MEB, 2020c). In addition, sign language support was provided to the broadcasts on TRT EBA TV.

Current Studies

There have been studies examining those risks from various perspectives in special education in Turkey. Among them, some examined the opinions of teachers on distance learning applications of individuals who require special education (Akbayrak et al., 2021; Elçi & Nuri, 2022; Mengi & Alpdoğan, 2020; Ünay et al.,

2021), some dealt issues and suggestions experienced by the families of students with special education needs during the pandemic (Aydemir & Islam, 2023; Erdem et al., 2021; Koçbeker & Karamukulu, 2022; Köken & Sazak-Duman, 2024; Kundakçı et al., 2022; Özmete & Pak, 2022; Yazçayır & Gürgür, 2021; Yıldırım- Parlak et al., 2022), and some others focused on the opinions of both families and teachers (Şenol & Can-Yaşar, 2021; Kurt & Kurtoğlu-Erden, 2020).

On the other hand, there are also studies conducted specifically for the hearing-impaired. Hearing-impaired students have several needs in educational settings, such as maintaining eye contact, listening skills, sound localization, providing common attention, and lip reading. Literature suggests that difficulties the hearing-impaired experienced in practice due to their hearing impairments while continuing their education under the effects of the pandemic should not be ignored. In the international literature, studies examining the effects of the COVID-19 pandemic on hearing-impaired individuals, children, and their families in Ghana (Swanwick et al., 2020), investigating how the distance learning environment should be designed for hearing-impaired students and effective teaching methods in distance learning settings (Online Education Options Designed for the Deaf, 2020; Lynn et al., 2020; Makeshine et al., 2020), including suggestions for the issues perceived by the teachers at the university during the pandemic (Rapanta et al., 2020), focusing on issues and suggestions in distance learning of hearing-impaired students (de Godoi et al., 2020; Lynch et al., 2020), were detected. As for the Turkey context, only limited number of studies were detected. Accordingly, one (Karasu & Kaya, 2021) aimed to examine the distance learning studies carried out at the higher education level with hearing-impaired university students during the pandemic, whereas other researchers, such as Saydam et al. (2022) investigated the relationship between auditory-verbal performance of primary school students with hearing impairments and distance learning needs. Apart from them, the study of Kalaç et al. (2020) aiming to identify issues and come up with suggestions for all individuals with special needs in the distance learning process and including hearing-impaired students from primary, secondary, and higher education in the research, was detected.

Purpose and Significance

As a result of the literature review consisting of limited number of studies, it could be uttered that the present study might contribute to the field on distance learning of hearing-impaired students during the COVID-19 pandemic period. This research can help to deeply understand the effects of distance education on hearing-impaired students during the Covid-19 pandemic. As the most important building block of distance education during the Covid-19 pandemic, teachers can evaluate both the process, themselves and their students, revealing the needs of hearing-impaired students in distance education, the difficulties teachers experience when using educational materials and teaching methods, and the difficulties students experience in communication and social interaction. Therefore, it is thought that this research will contribute to providing a roadmap for teachers, educational policy developers and educational programmers in terms of developing effective distance education strategies for hearing-impaired individuals in future emergencies and crises (such as natural disasters and epidemics).

The primary purpose of this study;

1- To determine how the education of hearing-impaired students had been planned through distance learning during the COVID-19 pandemic period,

2- How educational activities had been carried out,

3- What kind of problems had been encountered in this regard, and

4-To provide an understanding of the education of hearing-impaired students, according to the opinions of teachers with hearing-impaired students during the COVID-19 pandemic period.

Based upon that, the study also unfolds the difficulties experienced by the students, and the roles and responsibilities of the families throughout the process. In addition, this study aims to determine the strengths and weaknesses of the distance learning services provided in the COVID-19 pandemic in terms of the education

of hearing-impaired students according to the opinions of the teachers. Besides, it also aims to come up with implications and suggestions for hearing-impaired individuals to benefit from distance learning services more effectively after the pandemic process. In the light of all these, answers to the following research questions were sought:

1. What were the experiences and opinions of teachers with hearing-impaired students during the COVID-19 pandemic period regarding the distance learning activities provided for them?
2. What were the experiences and opinions of teachers who have hearing-impaired students in distance learning activities towards students and families during the COVID-19 pandemic period?
3. In relation to the views of teachers with hearing-impaired students regarding distance learning during the COVID-19 pandemic period, what could be suggested for these students to benefit from distance learning services more effectively?

METHOD

Study Design

This study was designed and conducted using phenomenology, which is a qualitative research design. Phenomenology aims to identify the in-depth experiences and thoughts of the participants in research on a subject and to reveal their experiences and the meanings they attribute to these experiences (Creswell & Creswell, 2018; Smith & Fowler, 2009). The reason behind its use was the aim of this study, which was to investigate the views and experiences of teachers with hearing-impaired students regarding the planning of distance learning, operation of educational activities, and encountered problems during the COVID-19 pandemic.

Participants

Since the study is a qualitative research, the purposive sampling method was used in order to easily reach in-depth and useful information for the purpose (Patton, 2018). That being the case, the participants of the research consisted of eighteen teachers from different branches working at different levels, with students diagnosed with hearing-impaired in their class. The information about the gender, graduation status, branch, and education level of the teachers participating in the study is given in Table 1.

Table 1. *Demographic Information*

Teachers	Gender	Graduation Status	Branch	Teaching Level
T1	Female	Bachelor	Classroom	Primary
T2	Female	Bachelor	Classroom	Primary
T3	Female	Bachelor	Mathematics	Highschool
T4	Female	Bachelor	Hearing-Impaired	Primary
T5	Female	Bachelor	Preschool	Preschool
T6	Female	Bachelor	Special Edu.	Primary
T7	Male	Bachelor	Classroom	Primary
T8	Male	Bachelor	Informatics	Secondary
T9	Female	Bachelor	Special Edu.	Primary
T10	Female	Bachelor	Preschool	Preschool
T11	Male	Bachelor	Classroom	Primary
T12	Male	Bachelor	Classroom	Primary
T13	Female	Bachelor	Informatics	Secondary
T14	Female	Bachelor	Classroom	Primary
T15	Male	Bachelor	Special Edu.	Primary

T16	Male	Bachelor	Special Edu.	Primary
T17	Female	Bachelor	Classroom	Primary
T18	Male	Bachelor	Special Edu.	Primary

Data Collection Tools

In phenomenology studies, semi-structured interviews could enable the researcher to deepen the responses of the participants with side or sounding questions depending on the flow of the interview (Creswell, 2009; Patton, 2018). For that reason, the data of this study were collected using a semi-structured interview form developed by the researchers. The semi-structured interview form used in the research consists of the personal information of the teacher and the interview questions about the distance learning practices with hearing-impaired students.

The process of preparing the interview questions commenced by scanning the literature and coming up with draft questions in the first place. Afterward, in order to ensure internal validity, the draft questions were submitted to the opinion of three faculty members in the field of special education and reviewed by taking into account the opinions of the experts. Following that, pilot interview sessions were conducted with three teachers online, and the semi-structured interview questions had their final form through corrections that were made by taking into account the unclear responses detected in the interviews. Accordingly, the final form of the semi-structured interview form used in the main study consisted of three main questions and further in-depth ones.

Data Analysis

The data were collected between March and May 2021 by the first researcher of the study by conducting one-on-one interviews with the teachers over the phone and online for 18 to 27 minutes. The total duration of all interviews was 394 minutes, and the transcript were 108 pages. As for the qualitative data, they were analyzed with the descriptive analysis method.

After the transcripts of the interview records were made by the first researcher, the transcripts of five randomly selected interviews were checked again by the second one. After reading all the transcripts in detail by the two researchers, the data were classified in correlation with the research questions and themes in terms of the interview questions. Within the scope of the research, 68 codes were built. Thus, the research findings were subjected to descriptive analysis under three main themes and 16 categories.

Validity and Reliability

While preparing the data collection tool for the content validity of the data collection tool to be used in the research, the special education and literature on distance learning was examined, expert opinions were taken, and feedback from the pilot interviews was taken into account. Within the scope of internal validity, the researchers asked the interview questions in a clear and understandable way, collected the data in detail, and created the codes and categories separately. Within the scope of external reliability, all stages of the research were explained in detail, and all audio recordings and transcripts were kept in a way that could not be accessed besides the researchers for data reliability. By keeping the real identities of the participants confidential, participant information was provided in detail. In addition, before collecting data, the researchers asked the participants for permission to record the audio and obtained their consent. While collecting the data, the participants were informed that the confidentiality of their responses would be ensured and that they would not be shared with any person or institution so that the sincere views of the participants could be reached and reliable data could be collected.

FINDINGS

In this section, the findings of the present study are demonstrated through themes, categories, and codes. The demonstrated themes and categories can be found in Figure 1.

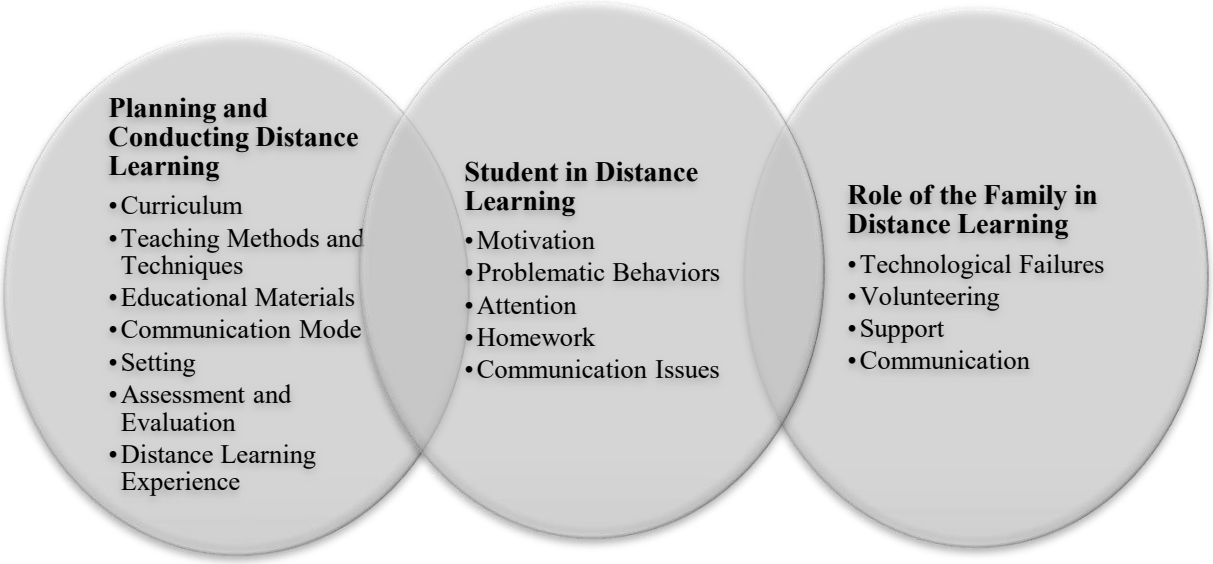

Figure 1. *Themes and Categories of the Research*

1. Planning and Conducting Distance Learning

The categories and codes belonging to the theme of planning and conducting distance learning of the teachers participating in the study are demonstrated in Table 2.

Table 2. *Categories and codes for the theme of planning and conducting distance learning.*

Category	Code	f
Curriculum	IEP	13
	Distance learning framework program for special education	1
	MoNE curriculum	2
	MoNE curriculum (by adaptation)	2
Teaching Methods and Techniques	Narration	10
	Demonstration	6
	Question and answer	3
	Direct instruction	3
	Modeling	3
	Verbal cue	1
Educational Materials	Concrete materials	5
	Worksheets	2
	Figure-picture-schema-graphic	2
	Video	5
	Web 2.0 tools	2
	Visual materials	8
	Power Point presentations	2
	Books	6
	Animations	2
	Story cards	1
	Audio materials	1

	EBA contents	1
Communication Mode	Sign language	6
	Lip reading	6
	Verbal method	5
	Natural auditory-verbal method	1
Setting	Zoom	11
	EBA	3
	UZEP	2
	WhatsApp	6
Assessment and Evaluation	Observation	4
	Project	1
	Participation	1
	Criterion Dependent Tests	2
	IEP learning outcome assessment	5
	No method used	7
Distance Learning Experience	No experience	15
	Learned within the process	5
	Have experience	3

Most of the participants responded that they use IEP for their hearing-impaired students and that it is necessary for teaching and assessment. The participants also stated that they carry out distance learning by following long and short-term goals. In addition, the participants stated that they used the goals set by MoNE when they found them appropriate for their students, that some teachers made adaptations to the goals for their students, and that they also used the Distance Special Education Services Framework Program prepared by MoNE. Some of the opinions expressed for this category are as follows:

"I used IEP. In IEP, we *have long-term goals, and under these goals, we have shorter goals related to that goal. This is how we conducted it." (T18)*

"I go according to the objectives determined by the MoNE. Since my student does not have any cognitive problems, I can even say that he is among the best in the class." (T12)

"*I looked at the student's readiness level. I took the student in the second grade. The objectives of the second year were advanced for* the *student. Therefore, I simplified them a little." (T1)*

"We applied everything *according to 'The Special Education Distance Learning Framework Program' submitted to us by MoNE." (T2)*

When Table 2 was examined, it was found out that in the category of teaching methods and techniques, the narration method was mostly preferred by the teachers in the distance learning process, and the demonstration method was the second preferred method. It was realized that methods such as modeling and direct instruction, which have been frequently used in special education, were preferred by teachers in the distance learning process, as well. In addition, it was seen that teachers use the question-answer and verbal cue techniques, which has been of the most commonly used ones in special education settings.

"I use the narration method as a teaching method in my lessons." (T8).

"The demonstration method. I used this method as it is the one ensuring active participation of the students." *(T1)*

"I tried to teach through modeling during distance learning." (T16)

"I preferred to apply the direct instruction method as it is more convenient for myself and the child." (T15)

Teachers stated that they prefer educational materials among materials such as visual materials, video, animation, figure-picture-schema-graphic, PowerPoint presentations, and web 2.0 tools, in which visuality is prioritized due to the learning characteristics of hearing-impaired students. In addition to this, teachers also stated that they used visual software such as Wordwall and that they used diagrams, tables, and graphs to make it easier for hearing-impaired students to learn the lessons. Some of the opinions expressed for this category

are as follows:

"Of course, I used more visual materials for my hearing-impaired student." (T5)

"I mostly used books. We progressed by doing homework from those books." (T12)

"As educational materials offer children the opportunity to learn concretely and based on experience, for example, these are paints, glues, tapes, scissors, play dough, paper clips…" (T4)

"…I taught in a way to strengthen his visual perception. I used web2.0 tools for it. Especially like Wordwall…" (T3)

"I also supported the narration with pictures, diagrams, graphics and visual tools." (T1)

"Even if he doesn't hear, I used animations that the child can at least understand when he sees it." (T17)

"…the materials I use: Educational cards, story cards, sentence forming cards, then narrative cards …" (T16)

In addition to sign language and lip reading, it was seen that verbal methods were also used in this process with students without severe hearing loss. Teachers emphasized the difficulties of communicating with sign language during distance education, the importance of gestures and mimics, and the necessity of having both the teacher's and the student's cameras on during the distance education process. Some of the teachers' views on this category are as follows:

"I can only use sign language and it was more tiring for us in distance learning. We had difficulties in distance learning since eye contact, lips, gestures and facial expressions, hand movements are very important for us..." (T2)

"Our students can actually communicate with their teachers and friends at school by lip reading. In online classes, there is no problem when we do our lessons with our camera on." (T3)

"I can communicate verbally with my hearing-impaired student." (T12)

Teachers with hearing-impaired students interviewed within the scope of the research stated that they mostly used synchronous distance learning settings such as Zoom and UZEP, while some teachers, on the other hand, were caught unprepared for this process, so they made video calls with their parents and students via the WhatsApp application and assigned homework. Some of the opinions expressed for this category are as follows:

"I started to do my lessons via Zoom in distance learning." (T11)

"I tried to continue the individualized education program that had been prepared before, via WhatsApp and calls." (T16)

"Our school continued its education through UZEP, the distance learning platform of Sakarya University. For that reason, I used UZEP in this process." (T4)

In the assessment and evaluation category, it was found out that some of the teachers did not use any method for assessment and evaluation due to their lack of experience in distance education, some teachers reported that they evaluated the student's IEP achievements, and some teachers reported that they used the observation method, which they found more appropriate for the nature of this process. In addition, some teachers also stated that they evaluated with criterion-dependent tests, projects, and class participation. Some of the opinions expressed for this category are as follows:

"I used the observation technique because it can be applied to students at all levels, that it provides an opportunity for objective evaluation, that the students are not aware of the process, that there are no time and place limits, and that it is suitable for the program." (T10)

"For example, if I gave color work to a child for one week, the next week I ask whether the child knows

the color red or s/he can generalize the color red. After that, I make an assessment according to their language and knowledge level." (T6)

"I gave them appropriate projects so that they could reveal something concrete. That's how I did my assessment." (T8)

"In distance learning, our exams have been canceled and removed. Therefore, we assigned a grade according to the performance of the children in the lesson, depending on whether the children had attended the class or not." (T2)

In the interviews, many of the teachers also stated that they did not have experience in distance learning settings and in planning lessons in these settings, using educational materials and providing classroom management in these settings, and that they somehow were caught unprepared. However, it was seen that the teachers also found the opportunity to develop themselves throughout the process. Some of the opinions expressed for this category are as follows:

"No, we practiced distance learning for the very first time. We had no prior knowledge." (T16)

"We also had to adapt to this process because we shouldn't be left behind. In this process, we had to continue education. That's why I developed it myself." (T9)

"In fact, distance learning is our field. I can say that I had both knowledge and experience with these settings." (T13)

2. Student in Distance Learning

The categories and codes of the teachers participating in the study for the theme of student in distance learning are demonstrated in Table 3.

Table 3. *Categories and codes of the student theme in distance learning*

Category	Code	f
Motivation	Low motivation	10
	High motivation	6
	Changeable depending on the situation	2
Problematic Behaviors	Irritability	3
	Acrimonious behaviors	2
	Inability to socialize	1
	No problematic behaviors	12
Attention	Short attention span	6
	Difficulty in concentrating	11
	No problem with attention	3
Homework	Reluctance to do homework	13
	No failure in homework	3
	Family support for homework	7
Communication Issues	Not knowing sign language	10
	To be bothered by loud noise	1
	Issues with the device	8

When the opinions of the teachers in the motivation category were analyzed, it was revealed that hearing-impaired students of most of the teachers experienced low motivation in distance learning. On the other hand, the hearing-impaired students of some were highly motivated, whereas it varied for very few of them during the process. Some of the opinions expressed by the teachers for this category are as follows:

"To be honest, their motivation is generally low." (T7)

"The motivation of my hearing-impaired student was always high." (T4)

"The level of motivation varied because of connection problems, not being in the same physical place… The child already had a hearing problem. An image freezing at that moment could negatively affect his motivation." (T9)

In the category of problematic behaviors, the teachers stated that their hearing-impaired students encountered problems such as nervousness or irritable behaviors during the distance learning process, and that not being able to socialize could also be considered as behavioral problems. Moreover, it was seen that the teachers with hearing-impaired students who had no problematic behaviors during distance learning were also in the majority. Some of the opinions expressed by the teachers for this category are as follows:

"In this process, his nervous reactions increased. Even if he couldn't speak in class, we were able to communicate somehow by writing and drawing, at least showing some objects with our hands and arms." (T5)

"Since he could not express himself in distance learning, he had more vicious behavior, I observed this." (T18)

"No, there was absolutely no change in the behavior of my hearing-impaired student. He has no behavioral issues." (T12)

In the distance learning process, the lack of a suitable environment for the student to attend the lesson at home seemed to have a negative effect on their concentration and attention span. Accordingly, only a few of the teachers mentioned that their hearing-impaired students did not have attention problems in distance learning. Some of the opinions expressed by the teachers for this category are as follows:

"I can attract the attention of the student for a certain period of time. After that he starts to get distracted." (T1)

"Actually, my student did not have an issue with attention in this process." (T4)

When the opinions of the teachers in the homework category were examined, it was found out that the hearing-impaired students of most of the teachers were reluctant to do their homework during distance learning. However, the teachers emphasized that family support was crucial in that process. Some of them indicated that they felt the great support of the parents regarding homework. Although very few, some teachers also stated that their hearing-impaired students did their homework without interruption during the distance learning process. Some of the opinions expressed by the teachers for this category are as follows:

"Like all students, he was bored. Had a hard time doing homework." (T14)

"I can say I felt the support of the family in terms of homework especially. Family support was also significant in this process." (T6)

When the opinions of the teachers in the category of communication problems were analyzed, it was unveiled that the majority of them considered not being able to use sign language while communicating with their hearing-impaired students as a communication issue. Besides, some of the teachers stated that hearing-impaired students' malfunctions or problems with their hearing aids during the distance learning process and the loudness of the ambient sounds in distance learning settings also caused issues. Some of the opinions expressed for this category are as follows:

"I don't know sign language anyway. I wish I knew it." (T5)

"The most difficult thing here is to communicate with children because, as I said, our children already have hearing aids, even when we are face to face, it was even more difficult in front of the computer while hearing our voices mechanically. Sometimes the earmold may not fit properly, for instance, the child cannot control it. Sometimes, in the family, if we do not follow it, we experience such problems because we are not with the child." (T2)

"The loudness of the surrounding sounds, that is, the absence of the class in the classroom, and the loudness of the hearing aid in the house, was an obstacle for the child to hear and understand." (T4)

3. Role of the Family in Distance Learning

The categories and codes of the teachers participating in the research related to the theme of the role of the family in distance learning are demonstrated in Table 4.

Table 4. *Categories and codes regarding the theme of the role of the family in distance learning.*

Category	Code	f
Volunteering	Reluctance to distance learning	10
	Not believing in the benefits of distance learning	9
	Finding face-to-face training more helpful	4
	Willingness to distance learning	2
Technological Failures	Connection lost	15
	Lack of equipment to attend the course	5
	Multiple children using a single device	8
Support	Reluctance to do homework	4
	Parents are concerned	8
	Parents were also challenged	7
Communication	Unable to reach the family	9
	We did not have any problems	8
	Did not attend regular meetings	2

In this category, the teachers pointed out that families were reluctant to distance learning since they did not believe that it would be beneficial, and that negatively affected them while providing distance special education services. That being the case, the teachers also pointed out that the low motivation of the families, who are the biggest supporters of the hearing-impaired students, against distance learning negatively affects their participation in courses and homework, and that reduces the expected efficiency of the learning practices. Some of the opinions expressed for this category are as follows:

"As I mentioned before, the family did not want the child to attend the distance learning course." (T1)

"Not only hearing-impaired students, but also parents do not view distance learning positively, they prefer learning to take place at the school." (T12)

"We did not encounter any major problems. Parents were very satisfied. There was no issue in distance learning classes." (T8)

The teachers indicated that there were many internet interruptions due to the lack of technological infrastructure during distance learning, that some children used the mobile phone of a family member since they did not have a computer or tablet to attend the lesson, which did not provide a healthy classroom environment. They also mentioned that due to financial difficulties, more than one child in the family had to use the same device to attend lessons, and that negatively affected the students' participation during the process. Some of the opinions expressed for this category are as follows:

"With the interruption of the Internet, our communication with the child was also cut off. Families did not have enough internet in the early days. Not every family has the same opportunity." (T13)

"We cannot teach through Zoom or EBA since they do not have tablets and computers. We only maintain them on a single phone." (T15)

"In some families, two or three children might have to do lessons from a single device, we had to plan our hours according to them." (T18)

Teachers interviewed within the scope of the study responded that families mostly supported the teacher and their children in the distance learning process by doing their best. Teachers emphasized that homework is important for achieving the goals of education during distance education. Some of the opinions expressed for this category are as follows:

"The parent, who has a hearing-impaired child, supported her child so that she would not fall behind

in her education and asked me for help during distance learning." (T2)

"In this process, turning learning outcomes into behaviors could only be possible through cooperation with the parents. I was giving assignments to my student to reinforce what I had taught through Zoom. However, the parent was reluctant to make him do homework." (T4)

In the interviews, most of the teachers pointed out that they had more difficulty in reaching the families in distance learning than face-to-face education, mostly due to the internet quota and interruption or the lack of available times. Apart from that, some unfolded that they organized regular online meetings with their parents, but they faced the participation problem of the parents, while others expressed that they did not encounter any issues in communicating with the parents. Some of the opinions expressed for this category are as follows:

"The parents were incompetent. I couldn't reach the mom and dad." (T5)

"During the pandemic, I held online meetings every two weeks with all the parents, but the parents of my hearing-impaired student could not attend these meetings regularly." (T7)

"I did not have a problem with the family, on the contrary, they were very diligent and self-sacrificing." (T2)

DISCUSSION

Examining the opinions of teachers who carry out distance learning activities with hearing-impaired students, the present study reached three themes, which were the planning and execution of distance learning, the role of students in distance learning, and the role of the family in distance learning. Furthermore, it was found out that teachers mostly used IEPs prepared before the pandemic for hearing-impaired students in distance learning, whereas some of them used the general education curriculum with or without adaptation. Accordingly, it could be uttered that the result of this study is parallel with the research findings made as a result of other research (Mengi & Alpdoğan, 2020; Elçi & Nuri, 2022). About the applications used during distance learning, it was revealed that the teachers used the Zoom application most of the time, as well as the EBA and WhatsApp applications (e.g., Karasu & Kaya, 2021; Mengi & Alpdoğan, 2020; Ünay et al., 2021). It was also unveiled that teachers in distance learning were inexperienced and mostly preferred visuals. As for the teaching methods, it was seen that they mostly used narration and demonstration. On the other hand, some teachers did not use any method for evaluation, whereas some used alternative measurement and evaluation methods such as observation and projects. Among the communication methods, sign language, verbal method and lip reading were preferred according to the wishes and needs of the hearing-impaired students. Again, all those results were found to be in line with the literature (e.g., Kalaç et al. 2020; Kurt & Kurtoğlu- Erden,2020; Lynn et al., 2020; Makeshine et al., 2020; Mengi & Alpdoğan, 2020).

Similar to the studies of de Godoi et al. (2020) and Karasu and Kaya (2021), it was revealed in this one that hearing-impaired students had difficulty in concentrating during distance learning activities due to their low motivation and reluctance to do homework. Regarding the problematic behaviors, it came to light that hearing-impaired students generally did not have one. However, when they could not express themselves in distance learning students, they got nervous and irritated. Besides that, most of the communication problems were caused by the teachers not knowing sign language and not being able to immediately intervene in the problems related to the hearing-impaired student's device, which are also compatible with the literature (e.g., de Godoi et al. 2020; Karasu & Kaya, 2021; Kalaç et al., 2020).

In the same vein as Ünay et al. (2021) and Koçbeker and Karamuklu (2022), it was found out in this study that parents were reluctant towards distance learning as they were concerned that it was not sufficient for their children. Nevertheless, they still supported the teachers for the sake of their children's education during the whole process (Köken & Sazak-Duman, 2024). Moreover, it was unfolded that different environmental and economic conditions of the students such as internet interruptions and having no or limited

number of devices to participate in distance learning at home prevented access to them (Köken & Sazak-Duman, 2024). Additionally, the fact that the way to reach the parents was via mobile phone or the internet made it challenging to maintain contact with them, which is also along the lines of the literature (e.g., Erdem et al. 2021; Guernsey et al., 2020).

CONCLUSION

As a result of this study, overall, the findings revealed a significant lack of teacher preparedness in adapting content and methods for hearing-impaired students in a remote learning context. The results of the study revealed that the education of hearing-impaired students was negatively affected during the Covid-19 pandemic period and that this situation requires action related to the dimensions of teachers, families, curriculum, environment, and MoNE.

In this ***direction, for practice,***

- Instructional adaptation should be made for the active participation, motivation and academic success of hearing-impaired students in distance education.
- Simultaneous subtitle support, visual material uses, and sign language support, depending on the communication method preference of the hearing-impaired student, will provide important support. In this regard, MoNE should provide opportunities such as more content, resources, and access to lecture videos for hearing-impaired students.
- It is another issue that these students have unequal opportunities regarding the internet, technological devices, etc. to participate in distance learning practices. Here, it is once again MoNE that should provide services for the solution of such issues.
- Trainings that can support teachers in both technological and instructional adaptations should be organized so that they can carry out distance special education services more easily and efficiently.
- In addition to that, family education seminars should be organized so that families, who are the biggest supporters of teachers in this process, could support their children in both psychological and educational aspects.

Suggestions ***for further research,***

- Research focusing on the experiences of parents with hearing-impaired children during the Covid-19 pandemic process can be planned.
- Research can be designed to comparatively analyze the effects of teachers on their typically developing peers and hearing-impaired students during the distance education process during the Covid-19 pandemic.

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APPENDIX-A

INTERVİEW QUESTİONS

1. What kind of distance education plan did you make for your hearing-impaired student in your class during the COVID-19 pandemic? Can you provide detailed information?

    Prompt 1: Can you evaluate the education program you used in distance education (achievements, suitability for level, and student characteristics) in terms of your hearing-impaired student?

    Prompt 2: What teaching methods and educational materials did you use in the distance education process for your hearing-impaired student?

    Prompt 3: Did you feel the need to change the communication method you used for your hearing-impaired student in distance education?

    Prompt 4: What are the measurement and evaluation methods you used in distance education for your hearing-impaired student?

2. How did you carry out the distance education activities you planned for your hearing-impaired student/students in your class during the COVID-19 pandemic, and what were the problems you encountered? Can you provide detailed information?

    Prompt 1: Did you have any knowledge about distance education?

    Prompt 2: How were the behaviors of hearing-impaired students and parents in distance education? What were the perspectives of hearing-impaired students and parents on distance education? Did you experience any problems in this regard?

    Prompt 3: Did you feel competent about the technologies you used in distance education? Did you have any previous knowledge or experience in this regard?

3. What was the students' motivation in the distance education you provided for hearing-impaired students?

    Prompt 1: Did any differences occur in the behavior of hearing-impaired students during distance education lessons? Did you observe any behavioral problems during this process?

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Opinions of Science and Art Center Teachers About Out-Of-School Learning Environments [1]

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ABSTRACT

In this study, it investigated whether there was a significant difference between level of use the Out-of-School Learning Environments by Science and Art Center (Bilsem) teachers and their "Attitude", "Effectiveness", "Competence" and "Behavior" levels towards these environments according to gender, age, the higher education institution of graduation and branch. The study was conducted with science, chemistry, physics and biology teachers working at Bilsem. 277 teachers participated in the study voluntarily. Data were collected using the out-of-school learning environments scale, which consists of 24 items and is arranged in a 5-point Likert type. According to the analysis results, it can be stated that the skills of Bilsem teachers regarding "attitude towards out-of-school learning environments" and "effectiveness towards out-of-school learning environments" are high, while "competence towards out-of-school learning environments" and "behavior towards out-of-school learning averages" are high. It was concluded that their skills were at a medium level compared to others. As a result of the analysis of the effectiveness of the variables of branch, gender and graduated faculty on the teachers' out-of-school learning environments scale score, it was seen that there was no significant difference between the teachers' levels of use of out-of-school learning environments.

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INTRODUCTION

Science is based on logical thinking, questioning, and researching to understand nature (Tatar & Bağrıyanık, 2012). According to Çepni (2014), science allows examining nature and predicting situations that have not yet occurred. Based on this, it can be said that life skills such as analytical thinking, creative thinking, and innovative thinking are among the skills that science education is expected to provide to individuals.

Understanding scientific information, knowing scientific facts and concepts, understanding the history and philosophy of science, adapting scientific information to daily life, and being able to produce solutions to daily life problems are among the basic goals of science education (Çepni, 2014). Individuals who receive science education are expected to have acquired these characteristics. Individuals with these achievements are individuals who can adapt to every situation and every change and can produce in every environment.

There is a rapid development in technology today. This situation increases the need for scientifically literate individuals (Çiçek & Saraç, 2017). We can say that the reason for this is that science education forms the basis of scientific and technological developments (Yavuz, 2012). The relationship between science and technology is not one-way, but a relationship based on mutual influence and development. In this context, the need to examine science education and developments in this field have emerged. As the quality of science education increases, the number of scientifically literate individuals will increase, and technology will develop accordingly, and as technology develops, new scientific developments will emerge. Many examples from the past to the present have demonstrated the accuracy of this situation. How science education is carried out, with which methods, in which environments, and where, are of great importance in this sense. Science education can be done in different environments such as classrooms, laboratories, and outside of school environments (Orion & Hofstein, 1994). Apart from planned and programmed learning within the boundaries of the school, individuals can also acquire new information on the street, in newspapers, and in their circle of friends, and informal learning can occur. When comparing the time school-age individuals spend at school and outside of school, Eshach (2007) revealed through his research that individuals spend 85% of their time outside of school. It should not be ignored that learning, especially in terms of science, takes place in the time spent outside of school. Because science is daily life itself, and the things that enable us to make sense of daily life are the information, facts, and concepts that science explains. When viewed from this aspect, learning that takes place outside of school is effective and important in terms of raising scientifically literate individuals.

Since learning does not only take place within the boundaries of the school, but informal learning is also an important factor in the development of individuals (Aktaş, Tokmak & İlhan, 2025; Türkmen, 2010). Informal learning can take place anywhere we are in our daily lives or during communication with someone. When informal learning takes place in planned and programmed trips outside the school or in school gardens, it is referred to as out-of-school learning (Çavuş, Topsakal & Kaplan, 2012). Although it is different from the education carried out within the classroom walls, the purpose of the educational activities carried out in out-of-school learning environments where planned and programmed informal learning is expected to take place is to create permanent changes in individuals, that is, to ensure that learning takes place. Out-of-school learning environments offer an important space that supports learning processes by providing students with experiences beyond classroom education. According to the experiential learning approach, students learn through direct experience in this environment and actively explore knowledge (Nelson, 2012). The informal learning approach (Maden & Dincel, 2015) argues that learning takes place in an unstructured and natural way; students have spontaneous learning opportunities in environments such as museum visits, nature trips and science festivals. These approachs provide a strong theoretical framework for how out-of-school learning processes support students' cognitive, social and emotional development.

Out-of-school learning environments are important for students at all levels and for every educational institution. The importance of out-of-school learning environments is obvious for students, teachers, administrators and parents in different types of schools. The importance and impact of out-of-school learning environments should be investigated for parents, teachers, administrators and teachers, whom we should consider as different pillars of education, and various steps should be taken in this regard when necessary.

One of the educational institutions in our country is Science and Art Centers (Bilsem). Bilsem are institutions established to make gifted/talented students realize their individual talents and to develop and use these talents (Su et.al., 2021). MEB (2018) defined gifted/talented individuals as "individuals who learn faster than their peers, are ahead in creativity, art, and leadership capacity, have special academic talent, can understand abstract ideas, like to act independently in their areas of interest, and show high-level performance". Based on this definition, gifted/talented students can find solutions to daily life problems in out-of-school learning environments and benefit from their own knowledge while finding these solutions (Braund & Reiss, 2006). The development of the talents of gifted individuals is important not only for the country where the gifted is located but also at the international level. Because these individuals are important values in the production of knowledge and the development of technology accordingly (Satmaz & Gencel 2016). The field of science attracts the attention of gifted/talented students in every sense. This situation reveals the importance of the science course for gifted/talented students (Yılmaz & Çaylak, 2009). In our country, the education given under the name of science course at the middle school level is called physics, chemistry and biology when it is passed to the high school level. In Bilsem, students who make the necessary progress in science courses take physics, chemistry and biology courses. In this context, it is possible to talk about the importance of science subjects for Bilsem students in general. Today is called the brain age and individual developments are the basis of social progress. Gifted/talented students' thinking skills and understanding of scientific concepts are more advanced than their peers (Şahin, 2018). Students who attend Bilsems will direct state policies in the future with the talents they have. Therefore, the increase in the equipment that students have is of particular importance. Teachers play an important role in the development of the high potential of gifted/talented students (Clark, 2002). The pedagogical knowledge and skills of teachers in the education of gifted students are a determining factor in maximizing the potential of students (Gökdere & Çepni, 2003). In this context, teachers who will take part in the education of gifted/talented students should be equipped and diverse in terms of knowledge and competencies (Chan, 2001). In the development of special talents, teachers should have developed themselves in creating instructional designs and preparing appropriate learning environments for these students (Fraser Seeto, Howard & Woodcock, 2015). The ability of teachers to implement educational programs specifically designed for gifted students makes students' learning processes more efficient (Dağlıoğlu, 2010).

When the interest of gifted individuals in science education and the contribution of out-of-school learning environments to the field of science are considered, the importance of Bilsem teachers' views on out-of-school learning environments becomes apparent. The fact that there is no study on out-of-school learning environments for Bilsem teachers in the literature review reveals the importance of this research. The aim of this research is to reveal the views of science, physics, chemistry and biology teachers working in Bilsem on out-of-school learning environments.

Students with special/extra-talented skills are individuals who have advanced language development, a developed sense of curiosity, a long focus period, can understand complex relationships between events, and have developed critical thinking skills. Having these characteristics shows that they are one or more steps ahead of their peers in terms of thinking skills. The importance of developing thinking skills is a subject that is included in all education systems, and there are various approaches to developing these skills. Content-based thinking instruction and skill-based thinking instruction are among the common approaches. The common point of these approaches is that the role of the teacher and

therefore the teaching environment that the teacher creates in developing thinking skills is great (Şahin, 2018). When developed societies are examined, it is seen that the importance given to individuals with special and superior abilities is directly proportional to development (Uzun, 2004). In this sense, it can be said that gifted individuals contribute to the development of societies. Enç (2019) stated that the evaluation of the abilities of gifted/extra-talented students greatly contributes to societies becoming more contemporary and economically independent. While the importance of gifted/talented students for societies is so great, there is a common idea that the education of these individuals should be handled specifically. The importance of teachers in the education of gifted/ talented individuals also emerges at this point. Teachers have great importance in many aspects from the identification of gifted/talented individuals to their education (Yılmaz & Yılmaz, 2020). Some of the duties of teachers working in Bilsem specified in the Bilsem Directive of the Ministry of National Education (MEB) are to prepare an educational program in accordance with the purpose and model of the sciences, to help students reveal their creativity, to make appropriate evaluations for students during and at the end of the process in order to determine the effectiveness of the implemented programs, and to use environmental opportunities by establishing connections with the environment in the implemented activities. In the education of gifted/talented students, the expected curriculum differentiation from teachers includes the differentiation of the environment, space, time and material (Şahin, 2018). In this context, Bilsem teachers should take into consideration the out-of-school learning environments in terms of environment differentiation while designing the education and training needed by gifted/talented students. Learning environments are not limited to the classroom, but also include environments such as libraries, museums, planetariums, zoos and factories. Therefore, teachers have important duties in terms of using out-of-school learning environments that offer different and rich content to meet the needs of students in education and training activities. From this perspective, Bilsem teachers' opinions and knowledge about the process, especially in terms of providing a connection with the environment, are important.

When the literature was reviewed, many studies were found investigating the views of teachers and administrators on out-of-school learning environments (Anderson, Kisiel & Storksdieck, 2006; Arabacı ve Döngel Akgül 2020; Ay, Anagün & Demir, 2015; Aydemir & Toker-Gökçe, 2016; Batman, 2020; Bezzekçi, 2020; Cabello & Ferk Savec, 2018; Clarke-Vivier & Lee, 2018; Çetingüney & Büyük, 2022; Çiçek ve Saraç, 2017; Dere & Çiftçi, 2022a; Dere & Çiftçi, 2022b; Fırat Durdukoca, 2023; Fűz & Korom, 2019; Gül, Tağrikulu & Çobanoğlu, 2023; Henriksson, 2018; Kisiel, 2005; Köseoğlu & Mercan, 2020; Luehmann & Markowitz, 2007; Ocak & Korkmaz, 2018; Sarıoğlan & Küçükezer, 2017; Wilhelmsson, Ottander & Lidestav, 2012; Yıldız, 2022). However, no study was found on the view of Bilsem teachers who work in the education of gifted/talented students in out-of-school learning environments. This research will help Bilsem teachers make their educational processes more efficient by providing guidance on how they plan and implement out-of-school learning environments. In addition, the knowledge levels of teachers and the difficulties they face in using out-of-school learning environments will be better understood and solution suggestions will be presented through this research. It is thought that this research will contribute to literature and be beneficial to Bilsem teachers.

The main problem of the study was determined as,

"How do Bilsem teachers' use of out-of-school learning environments change according to various variables?"

In this context, the sub-problems were determined as follows:

"What are the levels of Bilsem teachers' use of out-of-school learning environments?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to gender?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to age?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to the higher education institution they graduated from?

Is there a significant difference between Bilsem teachers' out-of-school learning environments and their attitudes, effectiveness, competence and behavior levels towards these environments according to their branch?"

METHOD

This section includes "research model, population, sample, data collection tool, statistical procedures used for data collection and analysis".

Research Design

The survey method, which is one of the quantitative research approaches, was used in the study. Survey method is a method based on collecting data to determine the opinions, interests, skills, abilities, etc. of a certain group regarding a subject or event (Büyüköztürk, et al., 2008). Therefore, the survey method was used to determine the views of teachers who have great importance in the education of gifted/talented students, which are key to the development of societies.

Research Participants

The participants in the study were science, physics, chemistry and biology teachers who educate gifted and talented students in Bilsem, try to associate science with daily life in a practical way and conduct science courses. The population of the study consisted of the teachers working in Bilsem. To determine the sample, the formula "$N= (N\ t^2\ p\ q)/(d^2(N-1)+ t^2\ p\ q)$" was used since the number of people in the population was known (Bougie, R. & Sekaran). According to the 2021-2022 statistical data of the Ministry of National Education, 2868 teachers work in 362 Bilsem. Based on the known population, the sample consists of 339 teachers in Türkiye. On 06.02.2023, due to the earthquake, which is referred to as the disaster of the century, this number decreased to 276. Among the 276 teachers, the research was conducted with participants working in the branches of science, physics, chemistry and biology and volunteering to participate in the research (Table 1).

Table 1. *Cronbach alpha values for the sub-dimensions of the out-of-school learning environments scale*

Variables		*f*	%
Branch	Science	78	28.26
	Biology	74	26.81
	Physics	53	19.20
	Chemistry	71	25.72
	Total	276	100
Graduated Institution	Faculty of Education	175	63.40
	Other	101	36.59
	Total	276	100
Gender	Male	102	36.96
	Female	174	63.04
	Total	276	100
Age	18-25	2	0.72
	26-35	61	22.10
	36-45	116	42.03
	45-55	81	29.35
	55-	16	5.80
	Total	276	100

In Table 1, it is seen that the number of science majors among the 276 Bilsem teachers participating in the study is 78, the number of biology majors is 74, the number of physics majors is 53, and the number of chemistry majors is 71. It is seen that 64.40% of the science teachers participating in the study graduated from the faculty of education, while 36.59% graduated from other faculties other than the faculty of education. It was concluded that 36.96% of the participants were female and 63.04% were male. According to the research data, it was concluded that 116 of the 276 Bilsem teachers participating in the research were in the 36-45 age range, and it was concluded that the individuals in this range were the most participants.

Research Instruments

The "Out-of-school learning environments scale" developed by Balkan Kıyıcı and Yavuz Topaloğlu (2018) with the necessary permissions was used as a data collection tool. The scale consists of 24 items and is organized in 5-point Likert type. The "Out-of-School Learning Environments Scale", which was developed to determine the attitudes, behaviors, effectiveness and competencies of teachers regarding the use of out-of-school learning environments in education, includes 4 factors: attitude, behavior, effectiveness and competence. Scale development studies were conducted with 170 classroom teachers and 350 science teachers. Expert opinions were taken for face and content validity. The Cronbach Alpha coefficient for internal consistency was .89 for the effectiveness dimension, .92 for the attitude dimension, .92 for the attitude dimension, .83 for the behavior dimension, and .79 for the competence dimension.

The Cronbach Alpha reliability coefficients for the whole scale and its sub-dimensions within the scope of this study conducted with the teachers are presented in Table 2.

Table 2. *Cronbach alpha values for the sub-dimensions of the out-of-school learning environments scale*

Dimensions of the Out-of-School Learning Environments Scale	Cronbach alpha
Attitude	.920
Behavior	.750
Effectiveness	.901
Competence	.901

When Table 2 is examined, according to the results of the reliability study, the Cronbach Alpha reliability coefficient of the whole scale was found to be .900. The Cronbach Alpha reliability coefficient for the sub-dimensions of the scale ranged between .750-.920.

There are 8 items (26, 27, 28, 31, 33, 34, 36, 38) in the first factor explaining the effectiveness dimension, 6 items (3, 6, 7, 8, 9, 10) in the second factor explaining the attitude dimension, 6 items (14, 15, 16, 21, 22, 23) in the third factor explaining the behavior dimension and 4 items (39, 40, 41, 45) in the last factor explaining the competence dimension.

The total variance explained by the 4 factors in the scale was calculated as 65.64%. As a result of the scale development study, it was seen that the out-of-school learning environments scale is a valid and reliable scale that can determine the attitudes, behaviors, effectiveness and competence dimensions of teachers' use of out-of-school learning environments in education.

Data Analysis

The data obtained were analyzed with statistical methods such as percentage, frequency, mean, standard deviation, Kolmogorov-Smirnov Test, Mann-Whitney U Test and Kruskal Wallis Test using the SPSS program and the findings of the research were obtained. Since it was determined that the skewness and kurtosis coefficients of the group did not change between the limits of -1 and +1 in the analysis results of the research (Tabachnick & Fidell, 2013) and accordingly it was concluded that the data did not have a normal distribution, nonparametric tests, was used. Therefore;

- Kolmogorov-Smirnov Test was performed for school learning disability performance and sub-dimensions of the changes in knowledge.

- Mann-Whitney U Test (gender and graduated higher education institution) was used for two-variable groups, Kruskal Wallis test (age and branch) was used to reveal the differences between groups with more than two variables.

Ethic

Ethics committee permission for the study was received from Hatay Mustafa Kemal University Human Research Ethics Committee (Date: 14.10.2022, Protocol No:35, Decision No: 24).

FINDINGS

Findings regarding the level of use of out-of-school learning environments by Bilsem teachers are given in Table 3.

Table 3. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

	N	Number of items	Min	Median	Max	$\bar{X}$	ss	(5-Point Likert Type)	Ss (5-Point Likert Type)
Scale	276	24	60.00	106.00	120.00	104.48	9.67	4.35	0.40
Attitude	276	6	7.00	29.00	30.00	27.67	2.95	4.61	0.49
Behavior	276	6	8.00	25.00	30.00	24.79	3.15	4.13	0.52
Effectiveness	276	8	14.00	37.00	40.00	36.52	3.86	4.56	0.48
Competence	276	4	4.00	16.00	20.00	15.49	3.57	3.87	0.89

When Table 3 is examined, the mean of the first sub-dimension is 27.67 with a standard deviation (s.s.) of 2.95; the mean of the second sub-dimension is 24.79 with a standard deviation of 3.15; the mean of the third sub-dimension is 36.52 with a standard deviation of 3.86; and the mean of the fourth sub-dimension is 15.49 with a standard deviation of 3.57. In this context, it was calculated that the highest score in the first dimension was 120 and the lowest score was 60; the highest score in the second dimension was 30 and the lowest score was 7; the highest score in the third dimension was 30 and the lowest score was 8; and the highest score in the fourth dimension was 20 and the lowest score was 4. When the scale was evaluated in general, it was determined that the highest score was 120 points, and the lowest score was 60 points. In this context, when the descriptive statistical results such as mean, median, minimum and maximum and standard deviation calculated based on the research data given in the Table are examined; it can be stated that Bilsem teachers' skills related to "attitude towards out-of-school learning environments" (= 4.61) and "effectiveness towards out-of-school learning environments" (=4.56) are high, while their skills related to "competence towards out-of-school learning environments" (=3.87) and "behavior towards out-of-school learning averages" (=4.13) can be said to be at a medium level compared to others. In general, it can be emphasized that these teachers' "level of using out-of-school learning environments" (= 4.35) is high.

The averages of teachers' views on out-of-school learning environments according to the attitude sub-dimension are shown in Table 4.

Table 4. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
ATTITUDE				
The activities done within out-of-school learning environments are fun.	276	4.60	.59	Strongly agree
Out-of-school learning environments reinforce the recently learned information.	276	4.64	.55	Strongly agree
Out-of-school learning environments help students love science classes.	276	4.66	.55	Strongly agree
Out-of-school learning environments help students enjoy the educational activities.	276	4.61	.57	Strongly agree
Out-of-school learning environments enable students learn and have fun	276	4.58	.58	Strongly agree

together.				
Out-of-school learning environments eliminate the boredom of the science classes.	276	4.57	.62	Strongly agree

When Table 4 is examined, the highest mean of agreement in the teachers' opinions on the attitude dimension of the scale related to out-of-school learning environments is the item "Out-of-school learning environments increase students' love for science lessons." (= 4.66), which corresponds to the level of "strongly agree". These results show that teachers have a positive opinion in terms of using out-of-school learning environments in science lessons.

The averages of teachers' views on out-of-school learning environments according to the behavior sub-dimension are shown in Table 5.

Table 5. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
BEHAVIOR				
I search for the out-of-school learning environments.	276	4.11	.72	Agree
I share my experiences from out-of-school learning environments with my friends and colleagues.	276	4.30	.66	Agree
I suggest alternative solutions to the authorities for the problems encountered while using out-of-school learning environments.	276	4.02	.83	Agree
I follow the studies on out-of-school learning environments.	276	4.00	1.00	Agree
I discuss the alternative solutions for solving the problems of including informal learning environments to science classes with the school administration and with my colleagues.	276	4.04	.80	Agree
I try to emphasize the requirements of the curriculum on using out-of-school learning environments.	276	4.33	.63	Agree

When Table 5 is examined, the highest mean of participation in the opinions of the teachers regarding the behavioral dimension of the scale related to out-of-school learning environments is the item "I try to gain the achievements in the science curriculum for the use of out-of-school learning environments" and (= 4.33) corresponds to the level of "agree". These results show that teachers' level of using out-of-school learning environments in science lessons is high.

The averages of teachers' views on out-of-school learning environments according to the effectiveness sub-dimensions are shown in Table 6.

Table 6. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
EFFECTIVENESS				
Out-of-school learning environments help the students learn by using their 5 senses.	276	4.63	.60	Strongly agree
The activities done in out-of-school learning environments help students reinforce the in-class knowledge.	276	4.61	.56	Strongly agree
The activities done in out-of-school learning environments help students learn better.	276	4.58	.58	Strongly agree
Out-of-school learning environments help students interact with each other.	276	4.57	.61	Strongly agree
Out-of-school learning environments improve the problem solving abilities of the students.	276	4.48	.63	Strongly agree
Out-of-school learning environments give a different point of view to the students.	276	4.55	.61	Strongly agree
Out-of-school learning environments improve the general knowledge levels of the students.	276	4.54	.64	Strongly agree
Out-of-school learning environments enable the students establish a connection between science and daily life.	276	4.54	.75	Strongly agree

When Table 6 is examined, the highest mean of agreement in the teachers' opinions on the effectiveness dimension of the scale related to out-of-school learning environments is "Out-of-school learning environments help students learn by using 5 sensory organs." and (= 4.63) corresponds to the level of "strongly agree". These results show that teachers' opinions about out-of-school learning environments being effective on students' learning are positive. The averages of teachers' views on out-

of-school learning environments according to the competence sub-dimensions are shown in Table 7.

Table 7. *Descriptive statistics of the out-of-school learning scale and its sub-dimensions*

ITEMS	N	$\bar{X}$	Sd	Level of participation
COMPETENCE				
I do not have enough knowledge about the out-of-school learning environments for science classes.	276	3.86	.99	Disagree
I do not have enough knowledge about the topics and equipments to be used in out-of-school learning environments.	276	3.88	1.00	Disagree
I am not aware of the out-of-school learning environments in the neighborhood.	276	3.97	.95	Disagree
I don't know anything about the correspondences about the process of including out-of-school learning environments.	276	3.76	1.12	Disagree

When Table 7 is examined, the lowest mean of participation in the scale of teachers' views on out-of-school learning environments was observed in the negative item "I do not have enough information about out-of-school environments that can be used in science lessons" ($\bar{X}$ =3.86) and this statement was answered as "Disagree". According to this finding, teachers showed a view that they consider themselves sufficient to ensure the use of out-of-school learning environments in schools and especially in science courses.

In general, teachers' views on out-of-school learning environments were "Strongly agree". In other words, it can be interpreted that teachers have sufficient knowledge and skills about the use of out-of-school learning environments and competence, effectiveness and behavior related to out-of-school learning environments and that they have positive opinions on this issue.

Statistical analyses were carried out to determine whether the use of Out-of-School Learning Environments by the Bilsem teachers differed according to variables such as gender, age, branch and education level. In this context, firstly, it was checked whether the data showed a normal distribution. Skewness and kurtosis coefficients were first examined to question whether the distributions of the group were normally distributed, and then the Kolmogorov-Smirnov Test was conducted. This test is used to examine the normality of the scores when the sample group size is 50 and above 50 (Büyüköztürk, Çokluk, & Köklü, 2010). In the study, it was determined that the skewness and kurtosis coefficients of the group did not vary between -1 and +1 limits. The fact that the skewness and kurtosis coefficients remain between -1 and +1 can be interpreted as the scores do not show a significant deviation from the normal distribution (Büyüköztürk, 2011).

Table 8 presents the content of the Kolmogorov-Smirnov Test Results related to the out-of-school learning scale and its sub-dimensions' score distributions of the Bilsem teachers.

Table 8. *Results of the Kolmogorov-Smirnov Test for the distribution of the scores belonging to the scale and its sub-dimensions of the Bilsem teachers*

	Statistics	sd	p
Scale	.082	276	.00
Attitude	.234	276	.00
Behavior	.111	276	.00
Effectiveness	.185	276	.00
Competence	.154	276	.00

When the results of the Kolmogorov-Smirnov Test and histogram distributions selected according to the sample size were examined, it was determined that the data did not show a normal distribution. When the results of the Kolmogorov-Smirnov Test were analyzed, it was determined that the calculated values were smaller than $\alpha = 0.05$ ($p < 0.05$). Accordingly, since the analysis of the data scores did not meet the normality assumption, it was decided to conduct the data analysis with Mann-Whitney U Test and Kruskal-Wallis Test, which are nonparametric tests.

The Mann-Whitney U Test was conducted to determine the effectiveness of gender variable on teachers' out-of-school learning environments scale score and the results are given in Table 9.

Table 9. *The Mann-Whitney U Test results according to gender*

	Groups	N	Mean rank	Sum of ranks	U	P
Scale	Female	174	133.81	23282.50	8057.50	.202
	Male	102	146.50	14943.50		
Competence	Female	174	131.50	22880.50	7655.50	.050
	Male	102	150.45	15345.50		
Effectiveness	Female	174	138.00	24012.50	8787.50	.890
	Male	102	139.35	14213.50		
Attitude	Female	174	135.16	23517.00	8292.00	.339
	Male	102	144.21	14709.00		
Behavior	Female	174	137.30	23890.00	8665.50	.743
	Male	102	140.54	14335.50		

As can be seen in Table 9, because of the Mann Whitney U test, there was no significant difference between the mean scores of teachers on the Scale and Attitude, Effectiveness, Efficacy, Competence and Behavior sub-dimensions according to gender ($p>0.05$). When the rank averages of the groups were examined, the mean out-of-school learning averages scale scores of female teachers were 133.81, while the mean scores of male teachers were 146.40. While female teachers' mean effectiveness scores were 138.00; male teachers' mean effectiveness scores were 139.35. The mean ranks of male teachers' efficacy scores ($\bar{X}$= 150,45) were higher than the mean ranks of female teachers (X= 131,50). The mean attitude score of female teachers was 135.16, while that of male teachers was 144.21. The mean behavioral scores of female teachers were 137.30, while those of male teachers were 140.54. This finding shows that the groups are close to each other and the difference between the groups is not statistically significant and the groups are equivalent. In the light of this information, it can be stated that female and male teachers have similar levels of attitudes, effectiveness, competence and behavioral skills related to out-of-school learning environments.

The Mann-Whitney U Test was conducted to determine the effectiveness of the variable of the higher education institution of graduation on the scale score of the teachers and the results obtained are given in 10.

Table 10. *The Mann-Whitney U Test results according to graduated Institution*

	Groups	N	Mean rank	Sum of ranks	U	P
Scale	Faculty of Education	175	138.02	24153.00	8753.00	.895
	Other	101	139.34	14073.00		
Competence	Faculty of Education	175	138.57	24249.50	8825.00	.985
	Other	101	138.38	13976.50		
Effectiveness	Faculty of Education	175	136.79	23937.50	8537.50	.629
	Other	101	141.47	14288.50		
Attitude	Faculty of Education	175	140.54	24595.00	8480.00	.556
	Other	101	134.96	13631.00		
Behavior	Faculty of Education	175	135.45	23704.00	8304.00	.401
	Other	101	143.78	14522.00		

When the findings in Table 10 are examined, because of the Mann-Whitney U test, there was no significant difference between the mean scores of the teachers in the sub-dimensions of Attitude, Effectiveness, Behavior and Competence of the teachers on the OLSLS and according to the higher education institution they graduated from ($p>0.05$). When the rank averages of the groups were examined, the mean score of the teachers originating from faculties of education was 138.02, while the mean score of the teachers originating from other educational institutions was 139.34. While the mean competence score of the teachers originating from education faculties was 138.57, it was 138.38 for the teachers originating from other educational institutions. While the average of the effectiveness scores of the

teachers originating from faculties of education is 136.79, it is 141,47 for the teachers originating from other educational institutions. While the mean attitude scores of the teachers originating from faculties of education are 140.54; it is 134.96 for the teachers originating from other educational institutions. While the mean behavioral scores of the teachers originating from faculties of education are 135.45; it is 143.78 for the teachers originating from other educational institutions. This finding shows that the groups are close to each other and the difference between the groups is not statistically significant and the groups are equal. In the light of this information, it can be stated that teachers have similar levels of attitudes, effectiveness, behaviors and competence skills related to out-of-school learning environments regardless of their education faculties or different education levels.

Kruskal Wallis Test was conducted to determine the effectiveness of age variable on teachers' out-of-school learning environments scale score and the results are given in Table 11.

Table 11. *Kruskal Wallis Test results according to age*

Scale and its sub-dimensions	Groups	N	Mean rank	sd	Chi-Square	p
Scale	18-25	2	45.50	4	8.034	.090
	26-35	61	151.93			
	36-45	116	127.78			
	46-55	81	148.19			
	56-above	16	127.66			
Competence	1	2	37.00	4	6.869	.143
	2	61	151.43			
	3	116	129.42			
	4	81	142.91			
	5	16	145.44			
Effectiveness	1	2	64.00	4	6.108	.191
	2	61	150.71			
	3	116	134.91			
	4	81	142.14			
	5	16	108.81			
Attitude	1	2	89.25	4	3.636	.457
	2	61	148.74			
	3	116	140.25			
	4	81	133.78			
	5	16	116.78			
Behavior	1	2	55.50	4	14.640	.006
	2	61	137.78			
	3	116	122.10			
	4	81	161.78			
	5	16	152.66			

When the results in Table 4.9 are analyzed, it is seen that there is no significant difference (χ^2= 8,034; p >.05) in terms of age variable in terms of teachers' level of using out-of-school learning environments. When the age variable is examined in terms of the sub-dimensions of scale, it is seen that there is no significant difference on the sub-dimensions of competence (χ^2= 6.869; p >.05), effectiveness (χ^2= 6.108; p > 0.05) and attitude (χ^2= 3,636; p >.05) related to out-of-school learning environments, while there is a significant difference in the sub-dimension of behavior (χ^2= 16.442; p ≤.05). Table 11 shows that most of the participants were between the ages of 36-45. The number of teachers between the ages of 18-25 is only two. This shows that the participant teachers are young educators. Although they are a young group, it can be said that they have no tendency to use out-of-school learning environments. Mann Whitney U Test was used to determine which groups the difference was between and to make pairwise comparisons. As a result of the analysis carried out to determine between which age groups the difference occurred, it was determined that there was a significant difference between the groups between the ages of 36-45 and 46-55 (U= 3387,000, p<.05, r: - 0.017).

Kruskal Wallis Test was conducted to determine the effectiveness of the branch variable on the out-of-school learning environments scale score of the teachers and the results obtained are given in Table 12.

Table 12. *Kruskal Wallis Test results according to branch*

Scale and its sub-dimensions	Groups	N	Mean rank	sd	Chi-Square	p
Scale	Science	78	144.73	3	3.991	.262
	Biology	74	147.68			
	Physics	53	136.58			
	Chemistry	71	123.52			
Competence	Science	78	140.18	3	1.021	.796
	Biology	74	142.85			
	Physics	53	129.08			
	Chemistry	71	139.15			
Effectiveness	Science	78	137.61	3	2.138	.544
	Biology	74	145.60			
	Physics	53	143.78			
	Chemistry	71	128.13			
Attitude	Science	78	148.66	3	3.092	.378
	Biology	74	135.32			
	Physics	53	142.40			
	Chemistry	71	127.75			
Behavior	Science	78	142.13	3	4.337	.227
	Biology	74	150.34			
	Physics	53	136.54			
	Science	71	123.63			

When the results in Table 4.10. are analyzed, it is seen that there is no significant difference (χ^2= 3.991; p>.05) in terms of branch variable. In terms of the sub-dimensions of the scale of the use of out-of-school learning environments with the branch variable, it is seen that there is no significant difference on the sub-dimensions of competence (χ^2= 1.021; p>.05), effectiveness (χ^2= 2.138; p >.05) behavior (χ^2= 4.337; p>.05) and attitude (χ^2= 3.092; p>.05) regarding out-of-school learning environments. In general, it can be stated that biology teachers working in Bilsem have higher levels of using out-of-school learning environments compared to other branches.

DISCUSSION, CONCLUSION, RECOMMENDATIONS

Education and training activities do not only take place within the school and classroom walls. Education and training activities can also take place outside the classroom. Like the educational activities that take place at school, the activities that take place in out-of-school environments also work within the framework of a plan and program. In this direction, the desired behaviors expected to emerge in students emerge outside the school and classroom walls at their own pace and because of their own experiences. In this study, it was concluded that the "level of using out-of-school learning environments" of Bilsem teachers was high. In other studies, in literature, it is generally concluded that the level of teachers' use of out-of-school learning environments is low. Arabacı and Dönel Akgül (2020) conducted a study with science teachers and stated that the number of teachers who did not use out-of-school learning environments during their professional life was considerable. Bozpolat and Alem (2022) concluded in their study that secondary school teachers' knowledge of planning out-of-school learning activities was at a medium level. Ergin Aydoğdu, Aydoğdu, and Aktaş (2023) stated in a study investigating out-of-school learning environments in secondary school mathematics schools that teachers' level of organizing out-of-school learning should be increased and teachers' competencies should be increased in planning, implementing, and evaluating out-of-school learning activities. Gül, Tağrikulu and Çobanoğlu (2023) stated that teachers' levels of organizing out-of-school learning should be increased and teachers' competencies in the dimensions of planning, implementing and evaluating out-of-school learning

activities should be improved. Anderson, Kisiel and Storksdieck (2006) emphasized that some of the problems teachers face in out-of-school environments are universal and that, accordingly, there should be improvements in the relationship between museums and schools. It can be said that the difference between the studies in literature and this study is the Bilsem teachers who constitute the sample of the study. Bilsem teachers were selected among teachers who had participated in various projects before applying to Bilsem, had been project coordinators, received postgraduate education, published in various fields, and participated in in-service trainings. In-service training courses of teachers continue while they are attending Bilsem. All these are indicators that Bilsem teachers are versatile, constantly self-renewing and well-equipped teachers. In this context, different results were obtained in terms of out-of-school learning environments competency levels in this study conducted with Bilsem teachers who attach more importance to their professional development, unlike the teachers who make up the sample of other studies in literature.

In the study, the highest agreement average in the teachers' opinions on the scale regarding out-of-school learning environments belongs to the item "Out-of-school learning environments increase students' love for science lessons." Out-of-school learning environments support teachers in the education process since they appeal to more than one sense organ of the students. In this sense, we can say that the high agreement of Bilsem teachers to this item is an expected situation. As a result, this obtained data can be interpreted as the teachers' idea that out-of-school learning environments increase students' interest and motivation in science group courses such as science/physics/chemistry/biology. When the literature is examined, Tatar and Bağrıyanık (2012) concluded in their study that out-of-school learning environments are effective in increasing students' interest and curiosity in science lessons. Henriksson (2018) investigated primary school teachers' perceptions of out-of-school learning in science education and concluded that teachers think that out-of-school learning environments increase students' interest in science, but economic reasons negatively affect these activities. Ay, Anagün and Demir (2015) mentioned in their study that out-of-school learning environments are effective in science education. In their study on revealing the views of science teachers on their experiences in out-of-school learning environments, Çiçek and Saraç (2017) reached the theme of the contributions of out-of-school learning environments to science lessons. When this theme is examined, it is seen that they reach the conclusion that out-of-school learning environments increase students' attitudes and motivation towards science lessons. Batman (2020) reached the conclusion in his study with physics teachers that they think that out-of-school learning environments will positively affect students' attitudes towards physics lessons. Arabacı and Dönel Akgül (2020) stated in their study that science teachers are of the opinion that out-of-school learning environments provide advantages in science education. Köseoğlu and Mercan (2020) concluded in their study with biology teacher candidates that teacher candidates think that out-of-school learning environments will contribute to the increase in students' interest and motivation towards the lesson. Çetingüney and Büyük (2022) concluded in their study conducted with science teachers that teachers' out-of-school learning environments contribute to students' development of positive attitudes towards science lessons. All these results in literature overlap with the results obtained in the study. Based on this, it can be said that the studies carried out in out-of-school learning environments increase students' interest in lessons, contribute to the development of positive attitudes, increase their motivation towards lessons and even reduce their anxiety levels towards learning, in terms of providing students with a concrete learning experience of learning by doing.

Pekin and Bozdoğan (2021) concluded in their study that there was no significant difference in terms of self-efficacy scores of teachers in different branches to organize educational trips to out-of-school environments. Gül and Saz (2023), in their study conducted with teachers in 25 different branches, concluded that there was no significant difference between teachers' out-of-school learning proficiency levels and their branches. When the data of different studies are examined, it is seen that the results are parallel to the data obtained from this study, which shows that there is no significant difference in the

sub-dimensions examined regarding out-of-school learning environments based on branches. The knowledge that out-of-school learning environments are not limited to museums only, and that there are many environments that support formal education, has become widespread with recent studies and projects. In this context, out-of-school learning environments that fall within the scope of the achievements of each branch can be found. With student-centered education being the basis, the desire of teachers, who are faced with the need to apply methods that will meet these needs of students, to integrate out-of-school learning environments into their lessons has increased in direct proportion. In this sense, it is thought that there is no significant difference between the views of teachers in different branches regarding out-of-school learning environments. As a result, the use of out-of-school learning environments in accordance with the lessons of all teachers will contribute to the development of students' cognitive, affective and psychomotor skills. Teachers want to include out-of-school learning environments in the education process to conduct more effective and efficient lessons and to provide meaningful learning. It can be said that the behavior, competence, effectiveness and attitude levels of Bilsem teachers in different branches are close to each other regarding out-of-school learning environments is a result of the educational goals expected to be realized in the 2023 vision.

The study concluded that Bilsem teachers have high effective skills in out-of-school learning environments. According to the findings of his study, Sarıgül (2021) stated that the teachers who participated in the study stated that trips to out-of-school environments contribute to the permanence of learning, students' recall of information, and their conversion of what they have learned into daily life skills. Clarke-Vivier and Lee (2018) concluded that primary and secondary school teachers believe that out-of-school learning environments allow for the expansion and diversification of the subjects covered in school and contribute to the development of students' characteristics such as research and asking questions. Batman (2020) concluded that physics teachers have positive thoughts about out-of-school learning environments and the use of these environments to support formal education. In this sense, it can be concluded that the data of the studies support each other.

In the study, it was concluded that there was no significant difference between the average scores of the teachers from the Out-of-School Learning Environments Scale and Attitude, Effectiveness, Competence, and Behavior subscales according to their gender. Sontay and Karamustafaoğlu (2017) concluded in their study that the self-efficacy belief scores of science teachers regarding organizing trips were not affected by the gender variable. Gül, Tağrikulu and Çobanoğlı (2023) concluded that there was no difference in teachers' levels of organizing out-of-school learning in terms of their gender, in line with the data obtained from their study. In the quantitative study conducted by Bozpolat and Alem (2022) on secondary school teachers, they again stated that they could not find a difference in teachers' perceptions of organizing out-of-school environments according to gender. The data of this study are similar to the studies in literature in this sense. The opinions and competencies of teachers regarding out-of-school learning environments do not differ in terms of gender. The reason for this is that in general, individuals' abilities, successes and interests are not related to gender, but to individuals' abilities, efforts, motivations and learning styles. In this regard, it can be concluded that teachers' interests, attitudes, behaviors and competencies towards out-of-school learning environments are not affected by their gender but by their individual experiences, abilities and motivations.

Sontay and Karamustafaoğlu (2017) conducted a study with science teachers to examine teachers' self-efficacy beliefs in organizing trips, and when the data obtained were examined, it was seen that the self-efficacy scores of science teachers who were older increased according to the age variable and that the scores created a significant difference between age groups. In this study conducted with Bilsem teachers, it was concluded that teachers' behavioral levels increased as age increased. As age increases, teachers' experiences increase because they could work with students with different characteristics. Experience of working with different students contributes to the development of understanding that students' needs may also be different and provide development in terms of pedagogical skills. As teachers

get older, the importance they give to professional development increases and their desire to use different teaching methods and techniques increases. In addition, in general, as people get older, their ability to empathize increases, which helps teachers establish deeper connections with students in the teaching profession and contributes to better understanding their requests. Teachers who become more competent in such matters realize the importance of out-of-school learning environments for students. This supports the result that out-of-school learning environment behavior levels increase as age increases.

As a result the descriptive statistics used to determine the level of use of Out-of-School Learning Environments by Bilsem teachers, it can be said that the skills of Bilsem teachers regarding "attitude towards out-of-school learning environments" and "effectiveness towards out-of-school learning environments" are high, while their skills regarding "sufficiency towards out-of-school learning environments" and "behavior towards out-of-school learning averages" are at a medium level compared to others. In general, it can be emphasized that these teachers have a high "level of using out-of-school learning environments". As a result of the statistical analysis of teachers' views on out-of-school learning environments conducted on an item basis, the highest agreement average in the scale was observed in the item "Out-of-school learning environments increase students' love for science lessons", and the lowest agreement average was observed in the negative item "I do not have enough information about out-of-school environments that can be used in science lessons".

Recommendations for Researchers

The sample of the study consists of science, physics, chemistry and biology teachers working in Bilsem. In future studies, studies can be conducted with teachers from different branches and administrators working in Bilsem.

Interviews can be conducted with Bilsem's parents to determine their views on out-of-school learning environments.

Studies can be planned with students to determine the views of gifted/talented students on out-of-school learning environments.

The difference between the views of Bilsem teachers working in different educational institutions on out-of-school learning environments can be examined.

Recommendations Based on the Result

The same sample group can be examined in terms of different variables such as professional seniority, whether they have received postgraduate education or not.

More in-depth and detailed data can be collected by conducting semi-structured interviews with science, physics, chemistry and biology teachers working at Bilsem regarding the use of out-of-school learning environments scale.

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Rethinking Teacher Education in the ChatGPT Era through a Currere Perspective

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ABSTRACT

This study focuses on the potential impact of generative artificial intelligence tools such as ChatGPT—which are capable of performing cognitive tasks such as knowing, summarizing, interpreting, applying, analyzing, reasoning, and creative problem solving—on teacher education and curriculum design. Written texts used both as learning activities and as evaluative tools are considered representations of effective learning and cognitive processes. As the study is framed within a literature review based on the currere approach, it integrates both a systematic review of relevant sources and autobiographical references. GenAI has emerged as a cognitive artifact that enables both teachers and students to assign and engage in complex cognitive tasks. To ensure the meaningful use of this cognitive artifact, the currere method is proposed as a pedagogical framework that encourages students to focus on their own learning and meaning-making journeys by reflecting on their life and educational experiences. Moreover, the concept of embodied cognition is emphasized as a valuable perspective in defining the cognitive domain of the learning process. It is also evident that the interaction with GenAI, which often takes place in a space of solitude intertwined with dialogic exchanges, requires adherence to ethical principles. When learners focus on their own processes of meaning-making, they can perceive the connection between academic knowledge and their personal life narratives. Consequently, the texts produced will be not only academically grounded but also personally original.

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INTRODUCTION

As an educator who has spent 25 years in a teacher training institution, I regularly assign writing tasks to help my students engage ethically with the kinds of intellectual activities valued in academia. These activities include competencies such as remembering and applying knowledge, creative problem solving, critical analysis, and inquiry. I typically assess these through open-ended exam questions or written reports. However, in the last two years, I have grown increasingly suspicious of texts produced by students working alone or in small groups at home—especially after some began subscribing to ChatGPT's premium service. I am left wondering: who truly authored these texts? Can plagiarism detection software identify AI-generated content, or must I rely on my 25 years of academic instinct and experience? If generative AI is now capable of producing text, it is clear that a student's lived experience, autobiography, and meaning-making journey have become essential markers of authenticity. As a solution to this emerging issue, I advocate for the use of the currere method, which facilitates reflection on life and educational experiences by helping learners focus on their own learning and meaning-making trajectories (Henderson & Gornik, 2007). Because currere emphasizes autobiographical understanding, I have chosen to use a personal tone and share relevant educational experiences throughout this paper.

The emergence of ChatGPT marks a pivotal shift from the mechanical world of technology to the cultural and cognitive realm. Just as writing is a technology that restructures thought (Ong, 2013), generative AI systems are now cultural technologies that actively participate in the production and transformation of meaning (Mishra et al., 2025). Unlike writing and books, which serve as tools for preserving human knowledge and self-expression, GenAI has become an active collaborator in creating cultural content. Large language models (LLMs), the foundation of generative AI, are text generators trained to predict words based on statistical patterns of co-occurrence in human-produced text (Brynjolfsson & Raymond, 2025). When OpenAI released the beta version of ChatGPT to the public on November 30, 2022, it quickly gained millions of users. It can exchange ideas and information in real time, adapting its output to user interactions (Mishra et al., 2025). These features imply that the system learns from each question and uses previous inputs as context. As I write these lines, one of my browser tabs is open to ChatGPT; I am engaged in dialogue with it to refine my ideas. We are the researchers, observers, and first participants of the generative AI era.

What if ChatGPT Produces Texts as Indicators of Cognition?

All of this began with the digitization and interconnection of writing. Writing, one of the three Rs emphasized by schooling, is central to abstraction and cognitive activity. As in all academic levels and disciplines, good writing is culturally valued (Zhao et al., 2024). Writing is both a learning process and a means of assessing learning outcomes. Popular sayings like "writing is thinking" and "writing is learning" reflect how writing is more than a vehicle for storing and transmitting knowledge. We often see writing and speech as windows into human cognition. Many writing instructors view writing as a representation of effective thought (Cardon et al., 2023). According to this view, those who write well also think well. In curricula, learning outcomes that end with verbs such as summarize, explain, classify, or synthesize typically imply written expression unless otherwise stated (Mishra et al., 2025). Writing is also central to activating and transmitting knowledge, reflecting the deep integration of language and thought. Language enables humans to engage in abstract reasoning, formulate scientific and philosophical theories, and participate in structured argumentation. Unsurprisingly, language is often considered the cornerstone of complex reasoning (Mahowald et al., 2024). Yet real-world language use also relies on non-linguistic cognitive skills. Understanding a sentence, inferring its implications, and deciding how to respond all depend on capacities beyond formal linguistic competence. Autobiographical and non-fiction writing practices -such as educational autobiography or currere essays- are expressions of personal, reflective thought and cannot be generated by ChatGPT through a single prompt.

Writing Currere Essays with ChatGPT

Efforts to fulfill official curricula, content lists, and standardized learning outcomes can succeed more meaningfully when linked to the learner's journey of making sense of their lived and educational experiences. Pinar (1975) described currere not as a fixed curriculum but as a dynamic process where one's life narrative and academic learning interact. I first encountered the concept of currere in 2017 during James Henderson's "Foundations of Curriculum" course at Kent State. At the time, I was exploring how the rational curriculum development model shaped by Tyler and his followers in my country could be integrated with values education. When Henderson asked us to write a currere essay, I found myself reflecting and writing about my own learning and teaching journey. Though I was already writing academic articles, this experience was different. Since then, I have both written my own currere texts and incorporated them into my courses, assigning them to pre-service teachers. I also ask students to enrich their narratives with references to leading scholars in the field, encouraging them to integrate external perspectives with their own ideas. This requires cognitive engagement and original authorship. In a time when AI tools possess cognitive abilities such as analysis, synthesis, and evaluation, I often wonder about the continued relevance of writing currere essays. I myself use ChatGPT and find the interaction to be oddly human—saying "please" and "thank you," even using emojis. These reactions suggest that our interaction with such cognitive artifacts is evolving into a deeply personal meaning-making process.

As usual, Turkey's national curricula were revised quickly and declared revolutionary. During the preparatory phase, I noticed that the so-called "integrated conceptual skills" such as questioning, discussing, summarizing, analyzing, synthesizing, inferring, and reasoning—central to these new curricula—can all be performed by ChatGPT. Although AI-generated book summaries tend to be shallow and mechanical, some students submit them via Google Classroom. More intellectually engaged students have started using GenAI as a tool in their cognitive processes—for example, by asking about educational values in cultures whose language and script they do not know, such as China or Brazil, and embedding the responses into their texts with proper referencing. These students ask meaningful questions and integrate GenAI responses critically. How should we use these new cognitive artifacts? Cognitive artifacts are multifunctional, computational tools that support or extend our thinking by providing representational scaffolds (Cassinadri, 2024). Just as mechanical tools amplify our physical strength, cognitive artifacts enhance our cognitive capacity. If many of the 21st-century cognitive skills can now be performed by AI, then our reading, writing, and reporting tasks should include reflective thinking and currere essays.

What Is Worth Learning in the GenAI Era?

One could say that the cognitive, ethical, and physical skills already in the curriculum remain worth learning. But it may be necessary to redefine learning goals. The answer to "how" we learn certainly needs to change. Learning experiences mediated by ChatGPT could be meaningfully redesigned through the *currere* method. Writing currere essays offers a deep, subjective inquiry into the learner's educational journey—a uniquely human capacity that generative AI cannot replicate. Pre-service teachers will still summarize, infer, and synthesize, but they will do so with reflection. Reflective thinking—a skill AI cannot mimic—is thus critical. As AI continues to intertwine with human cognition, shaping how we think, learn, decide, and interact with the world (Shanmugasundaram & Tamilarasu, 2023), students who outsource cognitive tasks to AI and copy-paste the outputs will be at a disadvantage. Valcea et al. (2024) found that GenAI performs well in tasks involving conceptual, factual, and procedural knowledge (e.g., remembering, understanding, and applying). However, due to the hierarchical nature of Bloom's taxonomy, students who rely on AI for lower-order tasks may struggle with higher-order skills such as reasoning and creative problem-solving. By incorporating currere and reflective practice into all levels of cognitive engagement, students can remain active across the full spectrum of cognition. For domains like foreign language learning or algebra, where formal rules and abstract notations are involved, strong and supportive guidance is needed. This support can come from family, peers, teachers, or even chatbots. Despite lacking human identity, AI tools that generate fluent sentences (Mahowald

et al., 2024) require us to exercise ethical judgment: which forms of assistance should we accept, and which should we politely decline?

Ethical Writing in the Age of GenAI

The aspect of GenAI that most directly concerns educators is the proliferation of text-generating programs. Text-generating programs (TGPs) represent a specific subset of AI that focuses solely on the production and processing of text. Rowe and Phillips (2024) found that although most undergraduate students do not fully trust TGPs and doubt their effectiveness, they find them useful during the idea generation phase. Many also believe that using TGPs in academia is somewhat unethical. Students and professors agree that clear guidelines are needed regarding their academic use. These guidelines must be grounded in both research and educators' classroom experiences. My own experience highlights emerging ethical issues. In Spring 2024, four of my students (one graduate, three undergraduate) submitted AI-generated texts as their own work and failed the course. Outsourcing a required cognitive activity to a machine is unethical and dishonest. According to Rowe and Phillips (2024), the inability to distinguish between human- and AI-authored texts constitutes an ethical breach. One suggested solution is for AI-generated content to be clearly labeled in-text, e.g., "[AI-generated], produced using OpenAI's ChatGPT." While most agree that using GenAI as a supportive tool is ethically acceptable, replacing human work with AI output crosses an ethical line (Fuchs, 2023). At the core of ethical and moral inquiry lies the dilemma. TGPs present many dilemmas for instructors and curriculum designers. Traditional ethical compasses like honesty and academic integrity remain vital. In Rowe and Phillips' study, one professor noted that students who denied using TGPs were doing moral harm to themselves. This may also apply to some teacher candidates. These candidates need to learn how to use GenAI ethically for learning. We can help them by demonstrating the strengths and limitations of tools like ChatGPT. For example, students who understand that AI may fabricate references are more likely to take literature reviews seriously and do the work themselves.

When teachers assign cognitively demanding tasks, they are also acknowledging that cognition is not separate from action. Summarizing, interpreting, and analyzing involve physical activity—typing on a keyboard, holding a pen, writing. This aligns with the theory of embodied cognition. Embodied cognition posits that learning is not confined to mental processes but is shaped by bodily experience and environmental interaction (Maturana & Varela, 1998). All doing is knowing; all knowing is doing. A learner who exclaims "Wow!", smiles, walks, or takes notes during a ChatGPT interaction is not just thinking—they are experiencing learning physically. In addition to cognitive intelligence, we must consider emotional and manual intelligences. Pre-service teachers must be aware of this triad in all learning activities, including those involving GenAI. Viewing cognition only through a rule-based, mentalist lens may lead to unnoticed ethical lapses. In contrast, the embodied cognition perspective supports the idea that learners who engage with GenAI internalize the ideas more deeply and develop a stronger sense of authorship. They write, reflect, and respond with gestures and emotions, recontextualizing ideas within their personal experience. Considering how their ideas will resonate in relationships with teachers and peers activates a sense of moral agency and empathy—the foundation of a deeply human ethical understanding. This type of cognitive production demands not only mental engagement but also physical and emotional presence.

Ethical and Effective Use of Text-Generating Programs

During the final project period, I allowed my students to use text-generating programs within ethical boundaries. While reading their final reports, I paid particular attention to how students used these tools effectively. These are the types of submissions that seasoned educators immediately recognize as "good work." They have a certain tone, a recognizable voice. As I read, I can visualize the student in the classroom. The writing is consistent with the student's level of participation and style. The student is embedded in the work. As Germano (2014) notes, the writer is always, even unwillingly, inside the text—it becomes a kind of autobiographical expression. In successful examples, students asked the AI meaningful, specific questions and skillfully integrated the responses into their own voice. For instance, one student asked, "How are moral values

developed among Amazonian tribes, and which values are most significant for them?" This is a question that adds cultural richness and would have been difficult to answer without AI support. In contrast, I have in front of me an ineffective example: a student pasted a full 1.5-page response from ChatGPT, listing ten bullet points about a learning theory. The issue here is not the use of AI per se, but the lack of thoughtful synthesis and engagement. The response shows no signs of the student's voice, questions, or interpretive efforts. These two cases demonstrate that students who are cognitively disengaged also tend to use AI in ineffective and unethical ways. In contrast, effective writing aligns with currere principles—it is reflective, rooted in one's life narrative, and connected to personal priorities. The text also aligns with the course's overarching themes and structure. Pre-service teachers already understand that copying from an encyclopedia or journal without attribution is unethical. Likewise, they must recognize that submitting unmodified AI-generated text is also unethical. That said, the temptation is understandable. ChatGPT's ability to generate paragraphs within seconds is a powerful incentive. This leads to a second insight: while acquiring knowledge is important, the process of gaining knowledge is just as valuable. Reflective assessment, learning processes, and formative evaluation are becoming more critical. Rather than focusing only on the final submitted report, educators should consider how the report was created. Reports generated through active engagement are more trustworthy. It's not just the knowledge shown in the final product that matters, but the journey of meaning-making. In this sense, curriculum is a journey of interpretation.

GenAI Literacy for Learning

Like other sectors, education has begun to incorporate GenAI for varied purposes across stakeholders. Even before ChatGPT's public release, Holmes et al. (2019) made an important distinction between learning about AI and learning *with* AI. Studies from both Turkish (e.g., Bozkurt, 2024; Arslankara & Usta, 2024; Işık et al., 2024) and international researchers (Long & Magerko, 2020; Zhao et al., 2024; Trust et al., 2023) have explored GenAI literacy. Broadly speaking, learning with GenAI requires critical thinking, moral reasoning, and the protection of human agency (Holmes et al., 2019). Mishra et al. (2025) argue that for pre-service teachers, it is crucial to move beyond viewing AI literacy as a narrow technical skill. Instead, educators must foster critical understanding of AI's pedagogical, ethical, and social implications. Zhao et al. (2024) update the definition of GenAI literacy to include reflective meaning-making. They emphasize that learners should critically evaluate and manage AI's influence on their educational experiences. This expanded literacy includes assessing how GenAI affects one's skills, learning processes, and the social dimensions of education. Zhao et al.'s study with graduate students showed that many participants no longer felt the need to seek help from teachers or peers after interacting with chatbots. As one participant from Malaysia remarked, "I always have conversations with it." Another, from India, reflected: "After using it, I didn't feel I needed to ask anyone else." This demonstrates that learning with GenAI also involves social and cultural dimensions. Bozkurt (2025) similarly notes that GenAI has expanded the definition of creativity—from individual production to dialogue-based co-creation. Likewise, Pinar (as cited in Ma, 2025) reminds us that individual study, while solitary, always unfolds within dialogical relationships. Working with GenAI is a form of engagement with the ideas, texts, and cultures of others. It involves respecting the other, trying to understand, and thinking alongside them. This, in essence, is an ethical stance.

The widespread adoption of ChatGPT reflects its low barrier to entry. But using it effectively still requires technical understanding and media literacy. GenAI significantly impacts how students write. For both pre-service and in-service teachers, opportunities should be created to reflect on and rethink their practices in light of these technologies (Trust et al., 2023). Levine et al. (2024) found that many students viewed ChatGPT like a teacher or peer. Their study revealed that GenAI can become part of a non-isolated model of writing, helping students through planning, drafting, and evaluating—without bypassing the core stages of composition. A GenAI literacy approach supported by *currere* would not only help students understand how to use AI tools, but also why, when, and to what extent—situating these tools within their broader learning processes. As Cacho (2024) suggests, students should not treat ChatGPT merely as a tool, but as a meaningful element of their educational experience. GenAI literacy for learning must include embodied cognition, the

linking of academic knowledge to personal life stories, and adherence to ethical and academic integrity. It must also relate to long-standing educational practices such as experiential learning, inquiry-based learning, and collaborative learning. In this sense, AI literacy becomes not just a technical skill, but a rich pedagogical practice grounded in human values.

DISCUSSION, REFLECTION WITH CONCLUDING REMARKS

The influence of ChatGPT and other text-generating programs on student writing—and, indirectly, on teaching practices and curricular structures—is inevitable. UNESCO (2023) has warned that generative AI may reduce students' reliance on educational content grounded in human-produced and approved sources, such as textbooks and official curricula. Many institutions and school districts have begun to assess their curricula's resilience and adaptability in response to this technological shock (Jongkind et al., 2025). Teacher education institutions, in particular, must evaluate their curricula's durability, as the impact of GenAI spans disciplines—from coding to algebra, prose to poetry, music to visual arts. It is time for damage assessment and strengthening efforts. Strength, in this context, must include flexibility, restructuring, and adaptation. This study has focused specifically on written texts, which are often considered representations of effective thinking, knowing, and meaning-making. In response to these new challenges, the autobiographical approach of currere and the practice of reflective thinking are proposed as potential solutions. By focusing on their personal meaning-making processes, individuals can uncover connections between academic knowledge and their life stories. This can lead to deeper self-understanding and even a reimagining of society (Henderson, 2015). Texts created through such introspection are filtered through lived experience and thus go beyond the generic and templated outputs of ChatGPT. These texts are original because they are rooted in both academic knowledge and the personal narratives of the students themselves. Henderson and Gornik (2007) emphasize that educators who aim to support students' personal learning journeys must first engage in similar journeys of understanding themselves. From the perspective of currere, meaning-making involves recalling past educational experiences, reflecting on them, and contemplating future hopes and fantasies (Baszile, 2017). We are among the first educators to speak publicly about our interactions with students mediated through a chatbot. I sometimes think of ChatGPT as "my colleagues," especially since it quotes their ideas. And yet, wouldn't it be better to just email them directly? Then my inner voice interrupts, "They must be busy. Better not disturb them."

If individual study unfolds in a space of solitude interwoven with dialogue (Ma, 2025), then the idea of a solitary journey accompanied by others is a fitting description of working with ChatGPT. Genuine dialogue with the other is not possible without ethical principles. Such dialogue includes not only the cognitive effort of composing and anticipating responses, but also the emotional engagement of gestures and expressions. This underscores embodied cognition, which holds that cognition is never disembodied or purely abstract—learning involves the whole body. To learn is to act, and to act is to know.

In this light, working with ChatGPT is not just an exchange of words. It is a cognitive, emotional, and ethical encounter. And perhaps it is also a reminder: the learning process, like curriculum itself, is not a product - it is a lived journey of understanding.

Limitations and Implications: As this research is situated within a literature-based study grounded in the *currere* framework, it employs both systematic literature review techniques and autobiographical excerpts. Therefore, the findings and interpretations should be understood within this context.

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The Metaphors of Pre-service History Teachers Regarding the Concept of "History"[1]

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ABSTRACT

This study aims to determine preservice history teachers' metaphors about the concept of history. The research group consists of 75 university students. The study data were obtained by the students completing the forms in which the sentence "History is like/similar to ..... because ....." was written. The metaphors created by the students were identified and categorized according to their common features. In this study, phenomenology design, one of the qualitative research methods, was used. The data obtained were analyzed using the content analysis technique. The SPSS data analysis program was used to analyze the collected data. Descriptive statistics of the collected data are given in detail. In addition, it was examined whether there was a relationship between "gender," "type of high school students graduated from," "the number of siblings," and "categories of history metaphors given as examples." As a result of the Chi-Square Independence Test, no relationship was found between these and the main categories of historical metaphors given as examples ($p>0,05$). The participants produced 53 distinct metaphors for the concept of history, divided into three categories. As a result of the research, it was found that the most preferred metaphor among the metaphors developed by the participants was the metaphor of light.

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INTRODUCTION

History has been described simply as “the science of the past”. However, this is an incomplete definition. Bloch, one of the founders of the French Annales School, transformed this definition into “the science of people over time”. On the other hand, the American historian Turner describes history as “the remnants of the past that have come down to us from the past and that are examined with a critical and interpretive understanding that arises at present”. On the other hand, Braudel sees history as “the sum of all histories, the joining together of past, present, and future professional abilities and perspectives” (Kütükoğlu, 1991, pp. 1-2).

History is a cultural treasure that determines the direction of development of society over time, enables people to establish a dialogue with their culture and integrate with it, and keeps the social consciousness alive (Turan, 2002, p. 189). Societies need to raise individuals capable of scientific thinking and problem-solving skills. In this context, history sets the ground for learning and other scientific disciplines (Candan & Öztaş, 2017, p. 509).

Concepts contribute to the formation of basic cognitive structures in an individual’s long-term memory and the encoding and storage of newly acquired information in their memory in a meaningful way. Therefore, teachers should attach great importance to concept teaching and guide and help students learn concepts meaningfully (Candan & Koçer, 2013, p. 357). Metaphors can support teachers and enable students to construct concepts effectively. In this sense, it is significant to identify the perceptions of students in the history department about the concept of history. One important means of determining these perceptions is the metaphors developed by individuals. Metaphors are used by various disciplines such as anthropology, philosophy, sociology, literature, history, international relations, and business. It has been observed that it is also used as a data collection tool in educational sciences.

The concept of metaphor stems from the Greek “metapherein”. Meta means “to change” and pherein means “to bear” (Levine, 2005, p. 172). In another definition, metaphor is expressed as a powerful mental tool that an individual can use to understand and explain a highly abstract, complex, or theoretical phenomenon (Saban, Koçbeker & Saban, 2006, p. 463). A metaphor expresses abstract or esoteric phenomena with more familiar expressions.

Metaphors are “a tool people use to explain how they see life, the environment, events, and objects using different analogies” (Cerit, 2008, p. 694). The fact that metaphors have been used as similes, allegories, and similitudes has caused them to be considered to have a literary and artistic function. However, it is agreed that metaphor is more of a tool that expresses and shows our mental and intellectual understanding (Er-Tuna & Mazman Budak, 2013, p. 613). Lakoff & Johnson (1980, pp. 3-6) stated that metaphor is common in language, thought, and action in daily life and argued that metaphor is not only a matter of language; on the contrary, the human thinking process is largely metaphorical.

Several studies have been conducted to determine the metaphorical perceptions of students at various education levels (Akça Berk, Gültekin & Çençen, 2015; Aydın, 2010; Beyoğlu & Ergin, 2018; Botha, 2009; Candan & Aydın, 2016; Candan & Koçer, 2013; Cerit, 2008; Çağlayan, 2024; Dere, 2019; Forceville, 2002; Kaya, 2011; Kılcan & Akbaba, 2018; Özbaş & Aktekin, 2013; Saban, 2004; Saban, Koçbeker & Saban, 2006; Sarı & Karadağ, 2021). However, there are a limited number of studies in the literature to determine what students’ metaphors are about the concept of history, which is the focus of the current research (Candan & Öztaş, 2017; Demircioğlu & Kantekin, 2019; Er Tuna & Mazman Budak, 2013; Güzel, 2019; Kantekin, 2018; Keçe, 2014; Kılıç, 2010; Memişoğlu & Taşkın, 2018; Mutluer, 2014; Yalçınkaya, 2013a; Yalçınkaya, 2013b).

In one of these studies, Kılıç (2010) examined the metaphors created by fifth-grade elementary school students on history topics in the social studies course with the discourse analysis technique. It was observed that the metaphors obtained at the end of the research were parallel to the students’ past experiences and

socio-cultural environments. In the research conducted by Er Tuna and Mazman Budak (2013) in which they aimed to reveal the perceptions of pre-service social studies teachers about the concept of history through metaphors, it was discovered that pre-service social studies teachers mostly used the metaphors of mirror, water, life, grandfather, tree root, stream, light and soil. In Yalçınkaya's (2013a) research examining the metaphors of 8th-grade elementary school students about the concept of history, the metaphors developed by 8th-grade elementary school students about the concept of history were divided into six categories: "comprehensive", "useful, and important for nations", "having a complex structure", "popular and addictive", "informative", "repetitive". In another study by Yalçınkaya (2013b), in which she examined the metaphors produced by pre-service primary school teachers about the concept of history, the metaphors produced by the participants were categorized into seven categories as "history that has the characteristics of change and continuity", "history that informs and provides lessons from the past", "history that reflects/is obliged to reflect the past as it is", "history that is complex and difficult to learn", "history with mysterious aspects", "history that repeats" and "history that is interesting/loved".

On the other hand, the most striking result of Keçe's (2014) study, which examined the perceptions of pre-service social studies and history teachers about the concepts used in history courses and the metaphors they used to explain their perceptions, was that the participants believed that the social life required by the concepts of "democracy" and "peace" was a utopian dream and that it was not possible to achieve a peaceful environment based on democratic attitudes and values. At the end of Mutluer's (2014) study in which he aimed to discover the metaphors produced by literature department students regarding the concept of history, it was observed that the metaphors produced by the students were concentrated in the categories of "knowledge of the past" and "history as a tool that guides us towards the future". At the end of Candan & Öztaş's (2017) research in which they aimed to reveal the perceptions of elementary school students about the concept of history in the context of metaphors, the category with the highest number of metaphors produced by elementary school students was the category of "history as an expression of diversity". It was concluded that students think history contains more diversity than it seems. Kantekin (2018) conducted a study to determine pre-service social studies teachers' metaphorical perceptions about social studies, history, and geography and concluded that pre-service teachers could not produce enough metaphors. At the end of Memişoğlu & Taşkın's (2018) study which aimed to reveal the perceptions of pre-service history teachers receiving pedagogical formation about the concept of history through metaphor analysis, it was found that the most common metaphors created by the teacher candidates fell within the category of "history as the knowledge of the past".

At the end of Demircioğlu & Kantekin's (2019) study, in which they aimed to reveal the beliefs of pre-service history teachers studying in the history pedagogy program about the concept of history through metaphors, it was observed that the pre-service history teachers participating in the study could not produce enough metaphors despite receiving an undergraduate level history education and that the pre-service teachers mainly produced metaphors especially about the aspect of history enlightening the future and taking lessons from history. In Güzel's (2019) study, in which he aimed to determine how prospective history teachers perceive the concept of history through metaphor analysis, the metaphor that was produced the most was water.

The aim of the research, which was designed within the framework of related research, is to determine the perceptions of history department students about the concept of history through metaphors. In line with this general purpose, answers to the following questions were sought:

1. Through which metaphors do students explain their perceptions of history?

2. Under which categories are these metaphors classified according to their common characteristics?

3. Is there a relation between "Gender", "Type of High School Student Graduated From", and "The Number of Siblings", and the categories of history metaphors given as examples by the students?

METHOD

Research Design

In this study, phenomenology design, one of the qualitative research approaches, was used. The phenomenological design centers on phenomena that can be encountered in various forms, which we know but do not have an in-depth and detailed understanding of. It is used in the detailed investigation of phenomena that are not wholly unfamiliar to the individual and cannot be comprehended entirely (Yıldırım & Şimşek, 2008). The data were analyzed using the content analysis technique. After determining the categories of history metaphors students gave as examples in their responses, the number of participants (frequency) and ratios (percentage) of these categories were calculated. Also, quantitative data analysis was conducted using the IBM SPSS Statistics 20 program. Descriptive statistics of the collected data are given in detail. In addition, it was examined whether there was a relation between "Gender" and "Type of High School Student Graduated From" and the categories of history metaphors that were produced.

Study Group

This study was conducted with 75 senior pre-service teachers studying in the Department of History. The frequency and percentage distributions of the gender of the students participating in the study are given in Table 1.

Table 1. *The frequency and percentage distribution according to students' gender*

Gender	Frequency (n)	Percentage (%)
Female	37	50,7
Male	36	49,3
Total	73	100

Of the participants in the study, 37 were female and 36 were male. Female students constitute 50.7% while male students constitute 49.3% of the working group (Table 1).

Data Collection Tools

Relevant literature was reviewed, and a semi-structured interview form was developed to collect the research data. Before the procedure, the researcher explained the procedure to the students in the classroom environment. Then, forms containing the personal information of the students and the sentence "History is like/similar to….. because ....." were distributed. Students were given 20-25 minutes to fill out the forms. The study data were obtained after the students filled out the relevant forms.

Data Analysis

Content analysis was used to analyze the data obtained in this study. First, the data obtained in content analysis are conceptualized. Then, these data will be appropriately organized according to emerging concepts. Then, themes explaining the data are identified (Yıldırım & Şimşek, 2008). The data obtained in this procedure were coded according to the concepts that emerged during the research, and themes were created.

Many studies in the literature (Aydın, 2010; Candan & Aydın, 2016; Candan & Öztaş, 2017; Er Tuna & Mazman Budak, 2013; Mutluer, 2014; Saban, 2009; Saban, Koçbeker & Saban, 2006; Yalçınkaya, 2013a; Yalçınkaya, 2013b) were followed by an analysis and interpretation of the metaphors. The metaphors were analyzed and interpreted in five stages. These stages are as follows: (1) Naming Stage, (2) Classification (Elimination and Purification) Stage, (3) Category Development Stage, (4) Validity and Reliability Stage, and (5) Data Transfer to Computer Environment Stage. Participants were coded as P1, P2, P3, P4....

The formula developed by Miles and Huberman (1994) for qualitative research [Reliability = Consensus / Consensus + Disagreement] was applied to determine the reliability of the research. Two expert faculty members were consulted on the metaphors and the categories created. The items on which two independent researchers agreed and disagreed were calculated, and the reliability of the study was determined as .91.

The details of the quantitative data analysis presented in the findings section are as follows:

1) Frequency Analysis: Frequency and rate information on "Gender", "Type of Education", "Mother's Education Level", "Father's Education Level", "Type of High School Student Graduated From", "Residential Unit Where Most of Childhood Was Spent", "Perception of Socio-Economic Status", "The Number of Siblings", "Country of Origin (Region)", "Family Type" and "Marriage Status of Parents" are given in tables.

2) Hypothesis Tests: The study's hypotheses were analyzed with the "Chi-Square Independence Test". According to this, it was analyzed whether the history metaphors (categorically) given by the participants were related to each of the variables "Gender", "Type of High School Student Graduated From", and "The Number of Siblings", respectively.

FINDINGS

In this section, the findings obtained from the metaphors developed by the students participating in the study about the concept of history are presented in tables and analyzed and interpreted according to the research questions.

General Findings Related to Students' Metaphors Regarding the Concept of History

According to the general findings obtained in this study, history department students produced 53 metaphors about the concept of history (Table 2). The students' most preferred metaphor for the concept of history was the metaphor of light (f=6). Apart from these, torch (f=3), sun (f=3), compass (f=3), chain (f=3), tree (f=2), mirror (f=2), rearview mirror (f=2), cycle (f=2), life (f=2), learning (f=2), jigsaw puzzle (f=2) and aged wine (f=2) metaphors were others produced more than once. The metaphors developed by the students and the number of students representing each metaphor (frequencies) are presented below (Table 2).

Table 2. *Metaphors Produced by the Students Regarding the Concept of History (f)*

No	Metaphors	Frequency	No	Metaphors	Frequency
1	Light	6	**28**	Light Bulb	1
2	Torch	3	**29**	Cable	1
3	Sun	3	**30**	Prophecy	1
4	Compass	3	**31**	Bridge	1
5	Chain	3	**32**	Sections of Nation's Whorl	1
6	Tree	2	**33**	Spirituality	1
7	Mirror	2	**34**	Culinary Arts	1
8	Rearview Mirror	2	**35**	Navigator	1
9	Cycle	2	**36**	Ocean	1
10	Life	2	**37**	Forest	1
11	Learning	2	**38**	Lecture	1
12	Jigsaw Puzzle	2	**39**	Teacher	1
13	Aged Wine	2	**40**	Bond	1
14	A Bottomless Pit	1	**41**	Hour	1
15	TV Series	1	**42**	Hide and Seek	1
16	Nature	1	**43**	Water	1
17	Bolt	1	**44**	Waterwheel	1
18	World	1	**45**	Painting	1
19	Philosophy	1	**46**	Caterpillar	1
20	Eye	1	**47**	A Dusty Book	1
21	Sea	1	**48**	Space	1
22	Reminiscence	1	**49**	Product	1
23	Football Match	1	**50**	Statesman	1
24	Memory	1	**51**	Puzzle	1

25	Chocolate	1	**52**	Our Existence	1
26	Story	1	**53**	Magnifying Glass	1
27	River	1			

Categories Formed by Students' Metaphors Regarding the Concept of History

Students' metaphors about the concept of history were analyzed, and three categories became evident. While categorizing these metaphors, not the word meaning of the metaphor, but the justification of the metaphor developed was considered, and the explanations made after "because" were considered. The categories created based on the participants' metaphors are as follows: "History as content diversity/richness", "history as continuity/connectedness", and "history as a guide/mentor". The metaphors and metaphor categories of the students about the concept of history are shown below (Table 3).

Table3. *Metaphor Categories of Students Regarding the Concept of History*

Metaphor Category	Metaphor	The Number of Metaphors	Frequency (Student Count)	(%)
History as content diversity/richness	Life (2), Learning (2), Aged Wine (2), World, Water, Product, A Bottomless Pit, Hour, Hide and Seek, A Dusty Book, Our Existence, Sections of Nation's Whorl, Ocean, Space, Forest, Chocolate, Football Match, Culinary Arts, River, TV Series, Sea	21	24	32
History as continuity/connectedness	Tree (2), Chain (3), Jigsaw Puzzle (2), Cycle (2), Caterpillar, Bridge, Nature, Puzzle, Bolt, Bond, Cable, Waterwheel	12	17	23
History as a guide/mentor	Light (6), Torch (3), Compass (3), Sun (3), Mirror (2), Rearview Mirror (2), Magnifying Glass, Lecture, Painting, Navigator, Spirituality, Light Bulb, Memory, Prophecy, Story, Reminiscence, Teacher, Statesman, Philosophy, eye	20	33	45
Total		**53**	**74**	**100**

When Table 3 is analyzed, it is obvious that the students produced the most metaphors with the content of "history as a guide/mentor" (n:33). It is understood that students mostly see history "as a guide/mentor" (n:33). This is followed by the categories of "history as content diversity/richness" (n:24) and "history as continuity/connectedness" (n:17).

Category 1: History as content diversity/richness

This category consists of 21 metaphors and 24 students (32%). Some expressions related to the metaphors forming this category, in which the content diversity/richness feature of the concept of history is emphasized, are given below.

P8: "It is like water. It is open and has much information for those who want to see it. It can lead to differences with the meanings it contains."

P19: "It is like hide and seek. It reveals the people who do not come to light sooner or later when the time comes."

P62: "It is like chocolate. Because the more you eat it, the more you want to. The more you read and learn, the more you want to learn."

P68: "It is like culinary arts. Because each historian adds his/her interpretation to his/her article and research."

P71: "It is like a TV series. Because it contains pain, drama, beauty, and any event you can imagine."

When these metaphors associated with the "history as content diversity/richness category" produced by the students are examined, it is seen that the students associate the perception of the concept of history with containing various things, being eternal, being full of mystery, and being unknown.

Category 2: History as continuity/connectedness

This category consists of 12 metaphors and 17 students (23%). Some expressions in this category, in which the continuity/connectedness feature of the concept of history is emphasized, are given below.

P4: "It is like a jigsaw puzzle. Because when events are combined, it gives us the big picture."

P9: "It is like a tree. Because it has many branches."

P13: "It is like a chain. Because events in history develop in a cause-and-effect relationship, events and developments follow each other. Therefore, they are linked to each other like a chain."

P23: "It is like a bridge. Because it connects the past and the future."

P29: "It is like a puzzle. Because it is sometimes impossible for historians to portray the actions of people in the past as they were, it is necessary to fill in the gaps of the puzzle according to the historian."

P66: "It is like a cable. Because it is a science that connects with various branches of science."

P74: "It is like a water wheel. Because it keeps continuing perpetually."

When these metaphors associated with the "history as continuity/connectedness category" produced by the students are analyzed, it is seen that students associate the perception of the concept of history with cause-effect relationship, connectivity, unity, and integrity.

Category 3: History as a guide/mentor

This category consists of 20 metaphors and 33 students (45%). Some examples of students' definitions of the metaphors that make up this category, in which the guiding feature of history is emphasized, are given below.

P14: "It is like the sun. Because it enlightens us."

P25: "It is like a navigator. Because it guides us to the future and describes the scientifically right path."

P31: "It is like a rearview mirror. We cannot determine our future without knowing history, as we check the rearview mirror to steer to the right or left while driving. We must look back at history to determine our path and future."

P32: "It is like a compass. Because the future can be shaped and directed by looking at the events in the past."

P33: "It is like a torch. Because it helps us to see our past and future by illuminating them."

P40: "It is like a light bulb. Because it illuminates the past and sheds light on the future."

P53: "It is like a teacher. Because it teaches us about our past and sheds light on the future."

P54: "It is like light. Because it illuminates both past and future events. By studying history, we can foresee how to behave today and how we have to behave tomorrow by better illuminating and clarifying past events."

P58: "It is like a statesman. Because history directs the future just as the statesman directs the

future".

P60: "It is like philosophy. Because it gives the ability to make a comprehensive interpretation about the events that have happened and will happen, and strengthens this ability."

P67: "It is like a mirror. Because when we look at history, we are informed about what our predecessors did, and we learn from the events in history and take our steps accordingly."

When these metaphors associated with the "history as a guide/mentor category" produced by the students are examined, it is seen that the students associate the perception of the concept of history with guiding, taking lessons, leading correctly, and shedding light on the future. The guidance aspect of history is emphasized.

Frequency Analysis

Table 4: *Distribution of Students by Type of Education*

Type of Education	Frequency (n)	Ratio (%)
Formal Education	41	55,4
Evening Education	33	44,6
Total	74	100,0

Of the respondents, 55.4% were formal education students and 44.6% were evening education students (Table 4).

Table 5: *Distribution of Educational Background of Parents*

Education Status	Mother		Father	
	Frequency (n)	Ratio (%)	Frequency (n)	Ratio (%)
Illiterate	9	12,2	2	2,7
Literate (School Unfinished) Bitirmemiş)	7	9,5	3	4,1
Primary School Graduate	31	41,9	36	49,3
Elementary School Graduate	15	20,3	18	24,7
High School Graduate	8	10,8	12	16,4
Associate Degree Holder	1	1,4	0	0
Bachelor's Degree Holder	3	4,1	2	2,7
Total	74	100,0	73	100,0

The distribution of the educational status of the respondents' parents is given in the table above (Table 5).

Table 6: *Distribution of High School Types Respondents Graduated from*

Type of High School	Frequency (n)	Ratio (%)
Anatolian High School	28	37,8
Anatolian Vocational High School	3	4,1
Industrial Vocational High School	6	8,1
Vocational High School	5	6,8
İmam Hatip High School	6	8,1
General High School	21	28,4
Technical High School	2	2,7
Social Sciences High School	1	1,4
Other	2	2,7

Total	74	100,0

Of the respondents, 37.8% are graduates of Anatolian High School, 4.1% of Anatolian Vocational High School, 8.1% of Industrial Vocational High School, 6.8% of Vocational High School, 8.1% of Imam Hatip High School, 28.4% of General High School, 2.7% of Technical High School, 1.4% of Social Sciences High School and 2.7% of other high schools (Table 6).

Table 7: *Distribution of Settlement Units Where Childhood was Spent*

Settlement	Frequency (n)	Ratio (%)
Village	16	21,6
District	19	25,7
Province	39	52,7
Total	74	100,0

Of the respondents, 21.6% spent their childhood in a village, 25.7% in a district, and 52.7% in a province (Table 7).

Table 8: *Distribution of Perceived Socio-Economic Status*

Socio-Economic Status	Frequency (n)	Ratio (%)
Low	9	14,8
Medium	52	85,2
Total	61	100,0

Of the respondents, 14.8% perceived their socio-economic status as low and 85.2% as medium (Table 8).

Table 9: *Distribution of The Number of Siblings*

The Number of Siblings (Including Respondent)	Frequency (n)	Ratio (%)
1	7	9,6
2	28	38,4
3	16	21,9
4	7	9.6
5	4	5,5
6	6	8,2
7	3	4.1
8	2	2,7
Total	73	100,0

Of the respondents, 9.6% have one sibling, 38.4% have two siblings, 21.9% have three siblings, 9.6% have four siblings, 5.5% have five siblings, 8.2% have six siblings, 4.1% have seven siblings, and 2.7% have eight siblings (Table 9).

Table 10: *Distribution of Hometowns (by Region)*

Hometown (by Region)	Frequency (n)	Ratio (%)
Marmara Region	29	39,2
Aegean Region	3	4,1
Black Sea Region	15	20,3
Central Anatolia Region	9	12,1
Mediterranean Region	2	2,7
Eastern Anatolia Region	10	13,5

Southeastern Anatolia Region Bölgesi	4	5,4
Turkmenistan	2	2,7
Total	74	100,0

Of the respondents, 39.2% are from Marmara Region, 4.1% from Aegean Region, 20.3% from Black Sea Region, 12.1% from Central Anatolia Region, 2.7% from Mediterranean Region, 13.5% from Eastern Anatolia Region, 5.4% from Southeastern Anatolia Region and 2.7% from Turkmenistan (Table 10).

Table 11: *Distribution of Family Types*

Family Type	Frequency (n)	Ratio (%)
Nuclear Family	56	78,9
Extended Family	15	21,1
Total	71	100,0

Of the respondents, 78.9% live in a nuclear family, and 21.1% live in an extended family (Table 11).

Table 12: *Distribution of Marriage Status of Parents*

Are your Parents Together?	Frequency (n)	Ratio (%)
Together	64	87,7
Separate	5	6,8
Other	4	5,5
Total	73	100,0

The parents of 87.7% of the respondents were together, 6.8% were separated, and 5.5% had other status (Table 12).

Hypothesis Testing

Table 13: *Chi-Square Correlation Test (Gender-History Metaphor Category) Result Table*

		Category of History Metaphor					
		n	Content Diversity/Richness	Continuity/Connectedness	A Guide/Mentor	χ^2	*p*
Gender	Female	37	12	11	14	2,356	0,308
	Male	35	10	6	19		
	Total	72	22	17	33		

According to the results of the Chi-Square test of independence, there is no statistically significant relationship between the gender of the students and the categories of history metaphors they produced *($\chi^2_{(2)}$=2,356, p>0,05)* (Table 13).

Table 14: *Chi-Square Correlation Test (Type of High School-Category of History Metaphor) Result Table*

		Main Category of History Metaphor					
		n	Content Diversity/Richness	Continuity/Connectedness	A Guide/Mentor	χ^2	*p*
Type of High School	Anatolian High School	28	7	7	14	3,967	0,411
	General High	20	8	2	10		

	School				
	Others	26	9	8	9
	Total	74	24	17	33

According to the results of the Chi-Square independence test, there is no statistically significant relationship between the type of high school the respondents graduated from and the metaphor they produced *($\chi^2_{(4)}=3,967$, $p>0,05$)* (Table 14).

Table 15: *Chi-Square Correlation Test (the Number of Siblings-Category of History Metaphor) Result Table*

		Category of History Metaphor					
		n	Content Diversity/Richness	Continuity/Connectedness	A Guide/Mentor	χ^2	*p*
The Number of Siblings	2 or Fewer	34	10	7	17	1,334	0,856
	3 Siblings	16	6	3	7		
	4 or more	24	8	7	9		
	Total	74	24	17	33		

According to the Chi-Square test of independence, there is no statistically significant relationship between the number of siblings of the respondents and the categories of history metaphors they produced *($\chi^2_{(4)}=1,334$, $p<0,05$)* (Table 15).

DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

This study aimed to explore the metaphors that history department students have regarding the concept of history, to group these metaphors under specific conceptual categories, and to determine whether there is a relationship between "gender", "type of high school student graduated from" and "the number of siblings" and the categories of history metaphors produced by the students. The analyzed categories and the metaphors and their explanations under these categories can reveal pre-service teachers' perceptions of the concept of history. This study determined that history department students produced 53 different metaphors about the concept of history. The students' most preferred metaphor about the concept of history was the metaphor of light *(f=6)*. This result aligns with the result of Mutluer's (2014) study. At the end of the study conducted by Mutluer (2014), the students' most preferred metaphor for history was the metaphor of light *(f=6)*.

A prominent finding by the help of the results of the related studies (Candan & Öztaş, 2017; Demircioğlu & Kantekin, 2019; Er Tuna & Mazman Budak, 2013; Güzel, 2019; Kantekin, 2018; Keçe, 2014; Kılıç, 2010; Memişoğlu & Taşkın, 2018; Mutluer, 2014; Yalçınkaya, 2013a; Yalçınkaya, 2013b) and this study is that the concept of "history" cannot be fully explained with only one metaphor.

After analyzing the metaphors of history department students regarding the concept of history, these metaphors were categorized into three categories. While categorizing these metaphors, not the literal meaning of the metaphor, but the justification of the metaphor developed was considered, and the explanations that follow "because" were considered. The categories created based on the participants' metaphors are as follows: "History as content diversity/richness", "history as continuity/connectedness", and "History as a guide/mentor". While history department students produced the most metaphors under the category of "history as a guide/guide" (n:33), the fewest metaphors were produced under the category of "history as continuity/connectedness" (n:17). It was observed that the metaphors produced by history department students generally carried positive connotations.

In the category of "history as content diversity/richness", it was determined that the features of history,

such as diversity, containing many things, having no end, mysteriousness, and obscurity, were emphasized. When the relevant literature was reviewed, it was seen that similar results were obtained in metaphor studies on the concept of history. This result correlates with the results of the studies conducted by Candan & Öztaş (2017), Demircioğlu & Kantekin (2019), Mutluer (2014), Yalçınkaya (2013a), and Yalçınkaya (2013b).

In the category of "history as continuity/connectedness", it was determined that the concept of history was emphasized in terms of cause-effect relationship, connectivity, unity, and integrity. When the relevant literature was reviewed, it was observed that similar results were obtained in metaphor studies on the concept of "history". This result correlates with the results of the studies conducted by Candan & Öztaş (2017), Demircioğlu & Kantekin (2019), Güzel (2019), Kantekin (2018), Kılıç (2010), and Yalçınkaya (2013b).

A total of 33 students created metaphors for the category of "history as a guide/mentor", which is the category with the highest number of students. It can be stated that the fact that students created the most metaphors in this category is evidence that they see history as a guide and a mentor in planning the future. In this category, it is seen that students associate the perception of the concept of history with guiding, taking lessons, leading correctly, and shedding light on the future. They emphasize the guidance aspect of history.

When the relevant literature was examined, it was seen that similar results were obtained in metaphor studies on the concept of history. In the study conducted by Er Tuna and Mazman Budak (2013) with pre-service social studies teachers, 23 students created metaphors belonging to the category of "history as a guide that illuminates the future," and it is the category with the highest number of students. When the metaphors belonging to this category were analyzed, it was determined that analogies and explanations were made about the fact that history has a mission that shapes and sheds light on the future, and that history can guide people to plan for the future. At the end of the study conducted by Mutluer (2014) with literature department students, it was seen that the metaphors produced by the students were concentrated in the category of "history as a tool that guides us towards the future". In the metaphors belonging to this category, it was determined that students regarded history as a guide. The data obtained in the study are like the results of Candan & Öztaş's (2017) study with elementary school students, Demircioğlu & Kantekin's (2019) study with pre-service history teachers studying in the history pedagogy program, and Güzel's (2019) study with prospective history teachers in the Faculty of Education.

In addition, quantitative data analysis was also conducted in this study with the IBM SPSS Statistics 20 program. It was examined whether there was a relationship between "gender", "type of high school student graduated from", and "the number of siblings", and the history metaphor categories produced, respectively. As a result, no relationship was found between any of these and the history metaphor categories given as examples.

In conclusion, metaphors can be used to determine students' perceptions of the concept of history. In this study, it was determined that students have different perceptions about the concept of history. Therefore, similar studies can be conducted at different levels of education to determine students' perceptions of history through metaphors. The results can be compared, and new actions can be taken according to the results.

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