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Children's Perceptions of Emergency Remote Teaching Reflected in Their Drawings

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Abstract: In the COVID-19 pandemic, a rapid transition from face-to-face teaching methods to distance education methods has forced students, teachers, administrators, and parents to struggle with various difficulties and obstacles. Emergency remote teaching, which is rapidly implemented in mandatory situations, and distance education, in which people decide on their preferences, are characterized as different concepts. While distance education is a process that is planned and supported by both theoretical and practical knowledge, emergency remote teaching is about the rapid activation of all resources that can be used both online and offline in a crisis. During the pandemic, the experiences of children who met distance education for the first time have started to be wondered and studies on this subject have gained intensity. In this study, it was aimed to examine the perceptions of 9-10-year-old children about the emergency remote teaching education process they experienced through their drawings. 116 children participated in the study. Descriptive phenomenological design, one of the qualitative research methods, was used in the study. The results of the study provide information about the human figures, learning environments, technological devices, and applications they used, the emotions they felt, their interactions with their peers and teachers, and the problems they encountered during the emergency remote teaching process.

Keywords: distance education, covid-19 pandemic, emergency remote teaching, draw-tell, picture analysis, primary school children, 9-10-year-old children, phenomenological design, children's experiences, children’s perceptions

Highlights

What is already known about this topic:

- Before the pandemic, studies on distance education focused on higher education, and with the pandemic, studies at the primary school level have intensified.
- The first experiences of primary school children with emergency remote teaching were mostly analyzed through interviews with parents and teachers, or questionnaires and semi-structured interviews with children.

What this paper contributes:

- This study helps to understand in depth the experiences of 9–10-year-old children about the emergency remote teaching process through their drawings.
- This study contains more meaningful results because it was conducted after the pandemic ended when children's panic and anxiety began to fade.
- This study gives education authorities and policymakers some ideas and tips on how to move forward with distance learning, especially for younger children.

Implications for theory, practice, and/or policy:

- Emergency remote teaching designs should be made by considering the developmental characteristics of young age groups.
- Strategies such as instructional presence and creating a sense of community should be used to prevent problems such as loneliness and social isolation that children may experience in emergency remote teaching.

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Introduction

Various approaches to the positive aspects of distance education and occasional criticisms will not prevent this education model from being preferred in special situations. Indeed, during the COVID-19 pandemic, institutions, administrators, educators, students, and parents had to adapt to the distance education process unprepared. The rapid transition from face-to-face teaching methods to online education methods has left schools with a complex and limited learning process (Rasmitadila et al., 2020). In the process of distance education, individuals have had to struggle with various challenges and obstacles. Bozkurt et al. (2020) argue that emergency remote teaching applied in cases of natural disasters, epidemics, etc., and distance education prepared and implemented in a planned, programmed manner should be evaluated differently from each other. They state that emergency remote teaching is used in compulsory situations, while distance education is an education method that individuals will decide in line with their preferences (Bozkurt et al., 2020). While distance education is a process that is planned and supported by both theoretical and practical information, emergency remote teaching is about the rapid activation of all resources that can be used both online and offline in a crisis (Bozkurt et al., 2020). Distance education, which was seen as a part of adult education before the pandemic, has started to be implemented at all levels of education as a compulsory practice with the pandemic.

Before the pandemic, distance education had a very important place, especially in adult education. When the literature is examined, it is seen that studies on distance education before the pandemic generally focused on higher education (Arkorful & Abaidoo, 2015; Broadbent & Poon, 2015; Gikandi et al., 2011; Lee, 2017), while studies on distance education at primary and secondary education level are relatively few. Since distance education is more flexible than face-to-face learning environments, it requires the learner to take more responsibility, be more autonomous, and have self-regulation skills (Yılmazsoy & Kahraman, 2018). Therefore, it is quite natural that the distance education experiences of children at the primary school level differ due to the differences in their developmental characteristics and who are just beginning to gain self-regulation skills (Bozkurt, 2020).

With the pandemic, the experiences of primary school children who met with distance education for the first time have started to be wondered and studies on this subject have gained intensity (Chiu, 2022; Erlangga, 2022; Putri et al., 2020). When the studies were examined, it was found that children's views and experiences towards emergency remote teaching were mostly examined with questionnaires or semi-structured interviews. Akbulut (2015) states that data collected with tools such as questionnaires and scales have limitations in measuring real experiences. Children can better explain the concepts that they have difficulty explaining verbally or in writing with the pictures they draw (Üztemur & Dinç, 2018). Therefore, the data obtained from the pictures drawn by children can provide much richer data than the data obtained verbally or in writing.

Literature Review

Children's drawings have long been studied in educational research. As noted by Milbrath et al. (2015), children can express their emotions, understandings, and thoughts through symbols, shapes, signs, and markers. In this context, analyzing drawings is critical for understanding children's underlying emotional states and gaining an in-depth insight into their inner worlds. Drawing is considered a second language for children and is seen as a tool through which they can express themselves freely (Sali et al., 2014). Vygotsky (1978) states that children actively use their imagination in the process of processing their reality and the events around them. This emphasizes the importance of children's ability to create and understand their visual representations through drawings. Stanczak (2007) states that the meaning of visual images largely depends on the interpretations of the individuals who look at these images. Both drawing and interpretation processes reveal children's ability to construct meaning through a variety of artifacts (Deguara & Nutbrown, 2018). Cox (2005) argues that drawings and their narratives should not

be considered as separate entities in the meaning-making process, but as integrated and integral parts of this process.

Lowenfeld and Brittain (1987) explained the different developmental stages in children's drawings and the relationship between these stages and the child's overall development. The developmental stages begin with a stage between the ages of 2 and 4 when children begin with random and freehand drawings. This period covers a period in which children's interpretations of their drawings are variable and fluent and turns into the pre-schematic stage between the ages of 4-7. The pre-schematic stage is followed by the schematic stage between the ages of 7 and 9 when children's drawings develop more distinct and concise shapes and children's marks are less fluid and more permanent. Between the ages of 9-12, the child is now in the reality stage. During this period, children do not like to exaggerate when expressing their feelings. Although figures tend to be rigid and immobile, children develop a greater awareness of details (Lowenfeld & Brittain, 1987).

When the literature is examined, it is noteworthy that there are quite several studies aimed at determining the perceptions of preschool, primary, and secondary school children about the pandemic process through the pictures they draw (Aksu, 2021; Alabdulkarim et al., 2022; Cornaggia et al., 2022; Dümenci & Demir, 2022; Erhan et al., 2022; Güngör et al., 2022; Mondragon, 2024; Pek, 2022; Sarkadi et al., 2023). In their drawings, children associated their perceptions of the pandemic with hygiene products such as masks, distance, soap, and gel (Dümenci & Demir, 2022). It was determined that children reflected their negative emotions in this process in their drawings as fear, pessimism, sadness, confusion, anger, overwhelm, and loneliness (Aksu, 2021; Dirin, 2022), and their positive emotions as happiness, hope, and pride (Dümenci & Demir, 2022; Mondragon et al., 2024). Children transferred the activities they performed during the pandemic process to their drawings as attending online classes, doing homework, walking in nature, going to the beach, playing games, playing sports, and watching television (Aksu, 2021; Alabdulkarim et al., 2022; Mondragon et al., 2024). The results of the studies conducted to determine children's perceptions about what needs to be done to be healthy and reduce transmission during the pandemic show that children have a good understanding of how the virus spreads and how to reduce transmission (Bray, 2021; Sarkadi et al., 2023); they associate being healthy during the pandemic with good nutrition, find the disease incurable and fatal, and perceive places outside the home as dangerous (Erhan et al., 2022).

Studies show that the pandemic process has caused significant changes in children's lives. The pandemic process has caused radical changes in the functioning of education systems around the world. The physical closure of schools has forced educators and students to move their knowledge acquisition processes to digital platforms. This has brought the importance and potential of distance education to the forefront. It was found that the data of the studies investigating children's experiences with emergency remote teaching during the pandemic were mostly collected through questionnaires and semi-structured interviews with teachers and parents (Alkan & Özdemir; 2023; Drvodelic & Domovic, 2022; Zhang, 2021). It is seen that there are very few studies that examine children's experiences with emergency remote teaching with data obtained directly from children (Chiu, 2023; Wongjamnong et al., 2021). Akbulut (2015) emphasizes that data collected through questionnaires and scales have certain limitations in reflecting real experiences. As mentioned earlier, drawing is a powerful non-verbal communication tool that children can use to express their emotions. It can be said that using the draw-and-tell method to examine children's emergency remote teaching experiences during the pandemic process in depth is of great importance, but studies examining children's emergency remote teaching experiences with this method are limited.

It is seen that the studies conducted with the draw-and-tell technique during the COVID-19 pandemic were mostly conducted with children in the pre-schematic (4-7 years) or schematic period (7-9 years). It is seen that children interacted with their teachers and friends during the emergency remote teaching process and reflected the satisfaction they felt from this interaction in their drawings using various images such as stars, hearts, and flowers (Özyürek et al., 2022). It was determined that children

frequently included technological devices used in emergency remote teaching such as television, phone, tablet, and computer in their drawings about emergency remote teaching (Pullu, 2022), used YouTube, Google, and Education Information Network Television (EBA TV) as application programs, and reflected video lessons and live lessons in their drawings (Pullu, 2022).

Purpose of the Research

It is seen that there are a limited number of studies in which children's perceptions and experiences of distance education during the pandemic process are examined through drawings and they are conducted with children in the pre-schematic (4-7 years) or schematic period (7-9 years) specified by Lowenfeld and Brittain (1987). This study, it was aimed to examine the perceptions of 9-10-year-old children, who do not like to exaggerate when expressing their emotions and can include more details in their drawings, about emergency remote teaching through drawings. For this purpose, the following question was sought to be answered in the study:

- What are the images reflected in the drawings of children's perceptions of the emergency remote teaching they experienced during the pandemic process?

Methodology

Research Model/Design

In this study, a phenomenological design, one of the qualitative research methods, was used. Phenomenology examines the basic structure underlying experiences (Merriam, 2013). In the phenomenological design, the researcher(s) try to understand the phenomenon under investigation in depth (Kvale & Brinkmann, 2008). According to Creswell (2013), there are two phenomenological designs: descriptive and interpretive. In the descriptive phenomenological design, participants' perceptions and experiences about a phenomenon are defined. Interpretive phenomenology, on the other hand, it is investigating how the participants make sense of a particular phenomenon based on their experiences. In this study, descriptive phenomenology design was used since the perceptions and experiences of 9-10-year-old children towards the emergency remote teaching process were examined.

Data Collecting Tools

In this study, data on children's perceptions of the emergency remote teaching process were obtained using the draw-tell technique. The draw-tell technique is a diagnostic method used to understand how children construct thoughts and concepts (McWhirter et al., 2000). Children were given A4 paper to make a drawing about emergency remote teaching and to explain their drawings textually.

Sampling or Study Group

The study group was determined according to the convenience sampling method. In this method, the researcher selects individuals and groups from which data can be easily collected (Sönmez & Alacapınar, 2014). The study group consisted of 116 children, 67 girls and 49 boys, aged 9 and 10, attending a primary school in the city center of Sinop, where the researcher lives and has easy access, in the spring semester of the 2021-2022 academic year. The reason for choosing the 9-10 age group is that children at this age are in the group that Lowenfeld and Brittain (1987) call the reality period. In the drawings of children in the reality period, there is a lot of detail, relationships between figures and objects, have been established, and perspective has begun to form. Therefore, in this study, we worked with children at the primary school level to examine children's experiences and perceptions of the emergency remote teaching process in detail.

To conduct the study, the researcher first obtained Ethics Committee Permission from the institution where she worked. Then, she met with the principal of the school where the study would be conducted and completed the necessary permission procedures. Afterward, the researcher met with the teachers in the classes where the study would be conducted, and the parental permission forms were given to the teachers. After the permission forms delivered to the parents through the teachers reached the researcher, the study was started with the children of the parents who gave permission.

Role of the Researcher

Children participating in the study were selected voluntarily. The scope of the study was explained to the children in general terms, and they were asked whether they would like to contribute to the study without giving details. No intervention was made during the drawing process and the children were asked to write what they wanted to tell on the back of their drawings. Children were left free during drawing. Children's drawings and written narratives were not shared with their teachers, but their teachers were given general information about the scope of the study.

Data Analysis

Visual and written elements in children's emergency remote teaching drawings constitute the data of the study. The data obtained from the study were analyzed by the researcher using the content analysis technique. Content analysis is a suitable analysis method for processing textual, visual, and auditory data and is preferred for its versatility (Stemler, 2015). The NVivo 14.0 program was used for the researcher to store the data, collect the codes under categories, repeat the processes when necessary, and access the results obtained at any time. Before coding, the researcher examined all the drawings to gain a general understanding and identify meaningful data units. As a result of this review, all the elements in the drawings were identified as the codes of the study. Each new code that emerged during the analysis process was added to the code list and updated. After the codes were determined, categories were identified, and the codes were placed under these categories. According to Miles and Huberman (1994), definitions become sharper when two researchers code using the same data set. In this process, multiple coders analyze the same data to investigate the stability of results across coders (Creswell, 2013). Multiple coders try to find a common path between the name of the code, themes, sub-themes, and parts of the code. In this study, the data were re-coded by two experts working in the field of distance education. The coders are working on qualitative studies and analysis techniques. To inform the coders about the study, the researcher explained in detail the purpose of the study, the research question, the data collection process, and the overall research design of the study. Then, the researcher compared the codes developed by the coders in terms of their similarities and differences. The researcher and the coders mutually discussed the similarities and differences and tried to create a consensus.

Validity and Reliability

Validity and reliability are of great importance to all researchers. There are various methods and techniques used to determine the validity and reliability of studies. To assess the validity and reliability of this study, the triangulation technique was adopted. This technique has four different types: method, source, analyzer, and theory/perspective triangulation (Patton, 2014). In this study, data sources (drawings and notes) and analyzer triangulation techniques were used. The validity and reliability of the data obtained were ensured by reviewing the categories and codes determined by the researcher. In addition, the data were analyzed by two researchers who are experts in the field of distance education using the same processes. For the reliability calculation of the study, the reliability formula proposed by Miles and Huberman (1994) was used.

$$R\ (Reliability) = \frac{Na\ (Consensus\ of\ Opinion)}{Na\ (Consensus\ of\ Opinion) + Nd\ (Difference\ of\ Opinion)}$$

While the coders agreed on 37 codes, they did not agree on 4 codes. Accordingly, coder reliability= 33/(37)*100 = 89%. This result shows that there is a high consistency between the coders and that the coding is reliable. The data obtained from the study were also reported by descriptive analysis and frequency analysis.

Research Procedures

The data of the study were collected from 116 children aged 9-10 years old who were studying in a public primary school in Sinop, Türkiye, in the spring semester of the 2021-2022 academic year, when the pandemic ended, and children started to continue their school education. After obtaining the necessary permissions, the researcher met with the 3rd and 4th-grade teachers and determined a common lesson time. Before the drawing process began, the children were provided with tools such as pencils, paints, and erasers. After all the preparations were completed, the researcher visited each class separately and asked the children to draw a picture of emergency remote teaching. To make the children feel comfortable, they were allowed to draw in their classroom environment; children were not rushed in this process and were given enough time. Children were asked to draw and color their drawings on A4 paper. They were also allowed to use dialog balloons in their drawings and were asked to write what they wanted to express in their drawings on the back of the paper. In this way, it was ensured that the children provided detailed information about their drawings and that the picture analysis could be done objectively.

Limitations

The current study is limited to data collected from 116 children aged 9-10 years old attending a public school in Sinop, Turkey in 2021-2022. Data collected from children studying in public and private schools in different countries with different socio-economic levels could have provided more comprehensive data on learning environments during the pandemic, children's interaction with teachers and peers, and the devices and applications used.

Findings and Discussions

In the study, the data on the drawings and textual expressions of 9–10-year-old children about the emergency remote teaching process they experienced during the pandemic were analyzed and six main categories were identified. The main category of 'Human Figures' was determined by coding the individuals involved in the process, and the main category of 'Learning Environment' was determined by coding the environments in which children performed or wanted to perform the learning action. The main category of 'Devices Used' was determined by coding the technical devices used by children, the category of 'Applications Used' was determined by coding the software used by children in emergency remote teaching, and the main category of 'Emotions' was determined by coding children's feelings about emergency remote teaching and the pandemic. The main category 'Interaction' was divided into two subcategories 'Positive' and 'Negative'. These categories were determined by coding children's interactions with their peers and teachers during the emergency remote teaching process. Similarly, the main category 'Problems Encountered' was divided into two subcategories. The 'Technical Problems' sub-category was determined by coding the problems children encountered while using the devices and applications, and the 'Health Problems' sub-category was determined by coding the health problems they encountered in this process. While presenting the findings, the letter C represents the child and the number next to it represents the numbers given to the children's drawings by the researcher.

Human Figures

In the study, the coding of individuals in children's drawings was included in the main category of human figures. Table 1 shows the code and frequency information related to the main categories.

Table 1. Codes and Frequencies Related to the Main Category of Human Figures

Human Figures	Girl (f)	Boy (f)
The child himself/herself	40	33
Teacher	31	27
Friends	28	20
Family	7	4

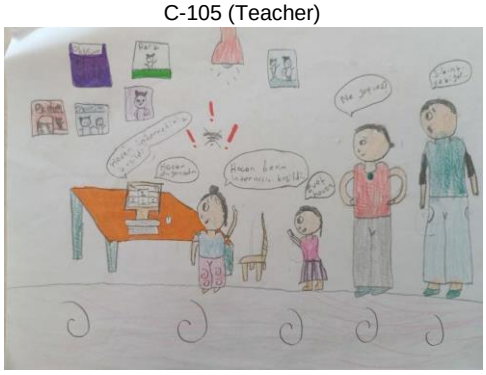
When Table 1 is examined, there are four codes in the main category of Human Figures in the pictures and expressions drawn by children in the emergency remote teaching process: 'the child himself/herself', 'teacher', 'friends', and 'family'.

Figure 1. Sample drawings related to the main category of human figures in emergency remote teaching

C-4 (The Child him/herself)

C-105 (Teacher)

C-116 (Friends)



C-12 (Family)

Figure 1 shows the human figures in children's drawings. C-4, one of the children who participated in the study, wrote on the back of his draw: "*My teacher and friends are on the screen. But I felt very lonely in my room. I wanted to express this in my painting*", while C-105 wrote "*Everyone was imprisoned at home because of Corona. But our teacher was always with us.*" C-116 stated, *"I was very happy when I saw my friends on Zoom. I always imagined that I was playing games with them. I wanted to express this.*" C-12 expressed the place of her family in emergency remote teaching *"When I had difficulty connecting to the live lesson, my parents tried to help me. But sometimes they could not do it either."*

The findings of this study emphasize the importance of these people in emergency remote teaching processes, as children's drawings depict themselves, their teachers, friends, and families as human figures. Yavuzer (2013) states that social and extroverted children with a sense of self-confidence and competence mostly draw themselves in their drawings. In Civek and Çakmak's (2019) study, it was

concluded that children who drew themselves in their drawings felt like a part of the school. The fact that children show themselves in the center in their drawings shows that they consider their existence important in the learning process. It is thought that this may indicate children's individual experiences in the education process and their self-efficacy perceptions. In addition, the frequent appearance of the teacher figure suggests that teachers play a central role in providing guidance and support in the emergency remote teaching process. This is in line with the instructional presence component of the Community of Inquiry Theory developed by Garrison et al. (2003). According to instructional situatedness, the teacher assumes a leadership role that manages the structure and process of the learning environment and supports learners to receive regular feedback and achieve their learning goals (Polat, 2013). On the other hand, children's drawings of their friends and families emphasize the importance of social interaction and family support. In support of these results, there are studies in the literature that social interaction and family support play a critical role in children's success in emergency remote teaching (Nikolopoulou, 2022; Tannert & Gröschner, 2021). It is emphasized that receiving help and support for emotional issues through peer interaction in school life is very important for children (Cartland et al., 2003) because most of the learning takes place in interaction with peers at school. Moreover, a sense of community or relationship with the school has been found to positively affect motivation and attitudes (Bateman, 2002). Numerous studies show that support from family and school supports perseverance and perseverance as well as self-efficacy (Datu, 2017; Eskreis-Winkler et al., 2014; Strayhorn, 2014). The social presence component of Garrison et al. (2003) Community of Inquiry Theory supports the findings of the current study. Social presence is defined as reflecting the personal characteristics of the participants to the community and communicating with others in the community. However, the lack of these social elements in the distance education process may increase children's feelings of loneliness and social isolation (Cairns et al., 2021), and lead to a loss of motivation and a decline in academic performance (Ferri et al., 2020). These findings show the complex impact of distance education on children. Therefore, the importance of factors such as social interaction, teacher, peer, and family support in children's educational process has become even more evident with emergency remote teaching.

Learning Environment

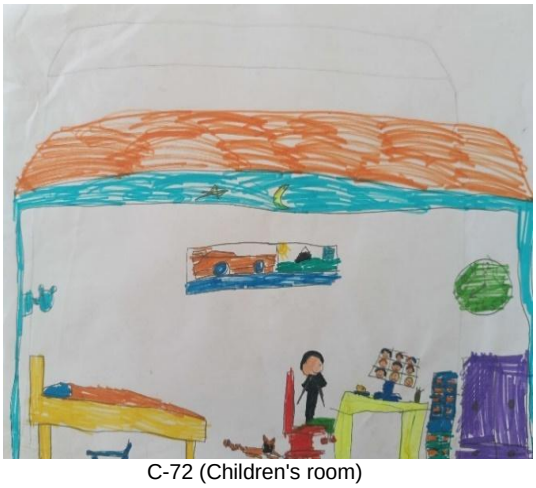
In the study, coding related to the spaces in children's drawings was included in the main category of learning environment. Table 2 shows the code and frequency information related to the main categories.

Table 2. Codes and Frequencies Related to the Main Category of Learning Environment

Learning Environment	**Girl (f)**	**Boy (f)**
Children's room	42	30
School	11	6
Common space at home	7	2
Classroom	5	2

When Table 2 is examined, there are four codes in the main category of Learning Environments in the pictures and expressions drawn by children in the emergency remote teaching process: 'children's room', 'school', 'common space at home', and 'classroom'.

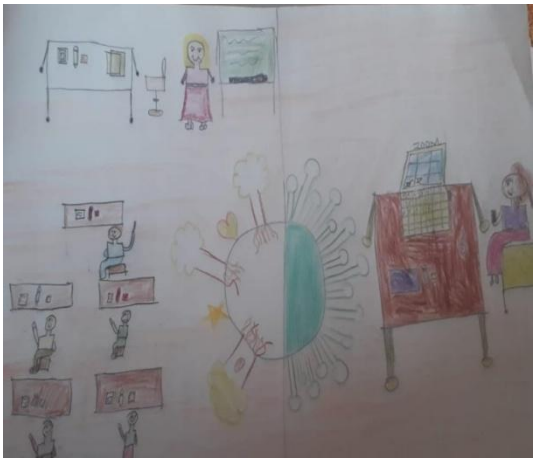
Figure 2. Sample drawings related to the main category of learning environments in emergency remote teaching



C-72 (Children's room)

C-111 (School)

C-101 (Common space at home)



C-114 (Classroom)

Figure 2 shows the learning environments in children's drawings. Among the children who participated in the study, C-72 said, *"My parents told me to study in my room. I always attended live lessons from my room "*, while C-111 *wrote "I was learning better at school. I can't go to school because of Corona. I couldn't learn anything."* C-101 stated, *"Our house is small. I do not have my room. I followed the lessons on the TV in the living room."* In C-114's statement comparing face-to-face education and emergency remote teaching, she wrote: *"I understood the lessons better in the classroom. I was close to my friends and my teacher. When I didn't understand, I would ask immediately. This was not the case in the live lesson. Sometimes I raised my finger to ask a question, but the teacher did not see it."*

The fact that children frequently depicted their own study rooms, school, common areas at home, and classrooms as learning environments in their drawings reflects the diversity and emotional impact of their educational experiences during the pandemic. These findings show how children react to the changes they have experienced during the pandemic and which environments they miss. Özer et al. (2020) emphasize that children's having an independent study room has become more important with the pandemic and that activities such as participating in distance education and doing homework may be more difficult in small homes with many children. Similarly, the results of Ünal's (2022) study examining the emergency remote teaching experiences of Syrian migrant children show that home environments and the number of siblings in education create problems in participation in live classes. According to data from the World Bank (2020), only half of the children in families with low socioeconomic status have a desk. In addition, the lack of adequate physical spaces at home and

children having to use the same space with parents who work remotely have also been some of the difficulties experienced during the pandemic (Ferri et al., 2020). Therefore, to ensure equality in education, the needs of disadvantaged groups should be addressed more carefully. In addition, among the findings of the current study regarding the learning environment, it was determined that children reflected the school and classroom environments in their drawings. This shows the longing of children for these learning environments and the importance of social interaction and learning opportunities provided by these environments, especially during the pandemic process. In Üstündağ's (2022) study, which examined children's views on COVID-19 through picture analysis, it was concluded that children reflected their longing for school in their drawings. Among the findings of the current study, it was found that some children preferred the home environment to the school environment in their drawings, albeit in small numbers. The study of Juguilon (2023) indicates that the factors that are effective in children's preference of home environment to school environment are the positive effect of family support on students' academic performance.

Devices Used

In the study, the coding of the devices used by children in their drawings was included in the main category of "Devices Used". Table 3 shows the code and frequency information related to the main categories.

Table 3. Codes and Frequencies Related to the Main Category of Devices Used

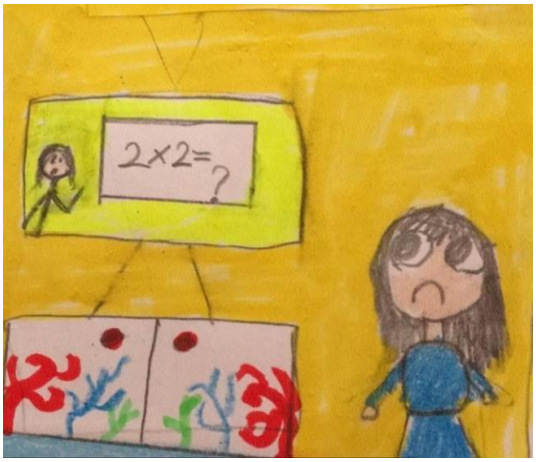
Devices Used	Girl (f)	Boy (f)
Laptop	31	27
Desktop computer	12	11
Television	6	3
Smartphone	6	3

When Table 3 is examined, there are four codes in the main category of “Devices Used” in the pictures and expressions drawn by children in the emergency remote teaching process: 'laptop', 'desktop computer', 'television' and 'smartphone'.

Figure 3. Sample drawings related to the main category of devices used in emergency remote teaching

C-81 (Laptop)

C-107 (Desktop Computer)



C-113 (Television)


C-103 (Smartphone)

Figure 3 shows the devices used during emergency remote teaching in children's drawings. C-81, one of the children who participated in the study, wrote on the back of her draw: "*I attended the live lessons on my father's laptop. Before, they did not give it to me. I think this was the best thing about distance education. Then I was playing games."* C-107 wrote: *"Before Covid, my family bought me a desktop computer so that I could both study and play in my free time. I followed the live lectures from there. I did not have a camera; a camera was bought for distance education."* C-113 stated, *"We were told that the lessons would be watched on EBA TV. At first, we found the channel with EBA TV. I watched the lessons on TV. Then live lessons started to be held. At that time, I used my mother's phone."* On the other hand, C-103 expressed the technologies she used during emergency remote teaching as follows: *"I followed the live lectures on my laptop. But sometimes when I couldn't connect from my laptop, I had to take the lecture with my smartphone. Since the screen on the phone was small, I had difficulty seeing the screen."* It was observed that children frequently reflected laptops, followed by desktop computers, televisions, and smartphones in their drawings of the technological devices they used in the emergency remote teaching process. It is thought that the reason for the high preference for laptops and desktop computers by children is that they have a larger screen and facilitate the learning experience by offering more powerful functionality. The association of television with EBA TV shows that students use this device to watch educational content. This is important as an alternative learning tool, especially for families with limited internet access. Within the scope of the current study, it is thought that the reason why smartphones are used less by children in the emergency remote teaching process is that children in this age group do not have their smartphones, and the use of smartphones is not considered appropriate by their parents. In the study of Vachkova et al. (2022), it was found that children from low-income and large families had only tablets and/or phones, while children with special needs and other children used computers, tablets, and/or phones in the online learning process. In the same study, it is stated that the reasons why children prefer to attend classes with smartphones include lying down to listen to lessons, being able to move around the house easily, listening to the lesson on the phone, and doing homework on the computer at the same time.

Applications Used

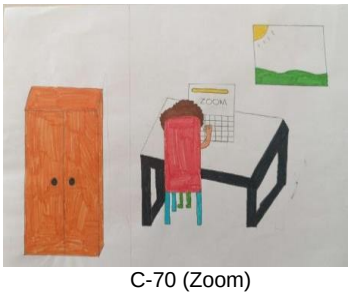
In the study, the coding of the applications used in their drawings was included in the main category of "Applications Used ". Table 4 shows the code and frequency information related to the main category.

Table 4. Codes and Frequencies Related to the Main Category of Applications Used

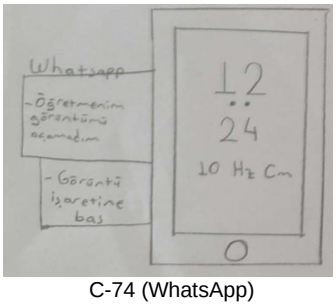
Applications Used	Girl (f)	Boy (f)
Zoom	22	18
EBA	18	11
WhatsApp	2	0

When Table 4 is examined, there are three codes in the main category of "Applications Used" in the pictures and expressions drawn by children in the emergency remote teaching process: 'Zoom', 'EBA', and 'WhatsApp'.

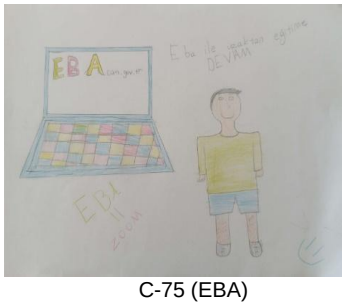
Figure 4. Sample drawings related to the main category of applications used in emergency remote teaching



C-70 (Zoom)



C-74 (WhatsApp)



C-75 (EBA)

Figure 4 shows the applications used during emergency remote teaching in children's drawings. C-70, one of the children who participated in the study, wrote on the back of her drawing: *" First, I was watching EBA TV on TV. Then our teacher told us that there was a program called Zoom and that she would teach us from there. Then we always did our lessons on Zoom "*, while C-74 wrote, "We were doing our lessons on Zoom. But when I had difficulty opening Zoom, I used WhatsApp to get help from my teacher. I wanted to explain this in my drawing". On the other hand, C-75 expressed the applications used during emergency remote teaching as follows: "I was following the lessons on EBA. We could connect to Zoom from EBA during the lessons where we would meet with our teachers and friends."

It is seen that children most frequently preferred Zoom, followed by EBA and WhatsApp applications in the drawings they drew during emergency remote teaching. These findings show which applications children use in emergency remote teaching how they use them and the effects of these applications in education. The popularity of Zoom emphasizes the importance of live interaction and face-to-face learning experiences in emergency remote teaching. A study by Pryor et al. (2020) showed that Zoom and similar video conferencing applications allow students to interact with teachers and peers and that this interaction enriches students' learning experience. Such applications have become important, especially during the pandemic, offering social interaction and part of the classroom environment for students. On the other hand, the use of WhatsApp shows that students and teachers prefer it as a more informal and easily accessible communication tool. In a study by Nuraeni and Nurmalia (2020), messaging applications such as WhatsApp support the learning process by providing fast and effective communication. These applications are used as a quick information-sharing tool, especially for assignments and announcements.

Emotions

In the study, the coding of the emotions children felt through their drawings was included in the main category of “Emotions”. Table 5 shows the code and frequency information related to the main categories.

Table 5. Codes and Frequencies Related to the Main Category of Emotions

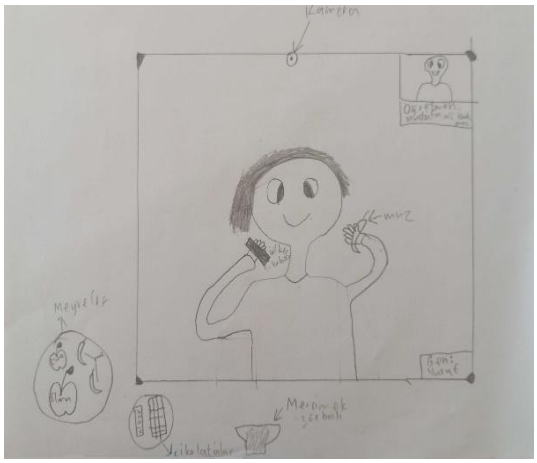
Emotions	**Girl (f)**	**Boy (f)**
Sad	23	10
Longing	11	16
Boredom	10	9
Happy	6	6

When Table 5 is examined, there are four codes in the main category of “Emotions” in the pictures and expressions drawn by the children in the emergency remote teaching process: “sad”, “longing”, “boredom” and “happy”.

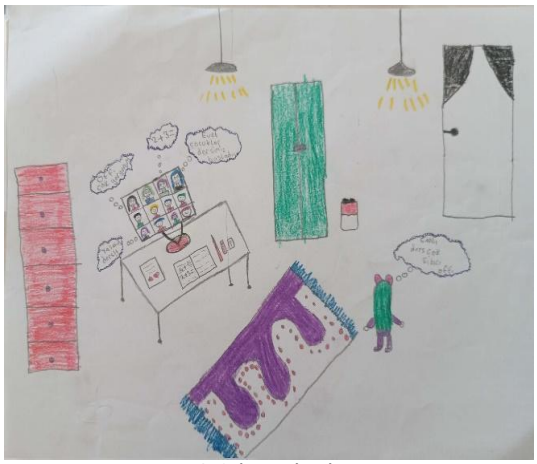
Figure 5. Sample drawings related to the main category of emotions in emergency remote teaching

C-1 (Sad)

C-79 (Longing)



C-90 (Happy)



C-6 (Boredom)

Figure 5 shows the emotions children felt during emergency remote teaching. C-1, one of the children who participated in the study, said, “*I wish schools were not closed. In my drawing, I wanted to express that I was sad because I could not see my teacher and friends, and I was sadder when I could not connect to the live lessons.*” While C-79 expressed that he missed his class in a bubble in his drawing. In the interview, C-79 wrote, “*As I mentioned in my drawing, I miss my classroom very much. It is nice to be with my friends and teacher in my classroom instead of listening to lessons alone at home.”* On the other hand, C-90 said that she was happy that the lessons were taught through distance education: *“If we are in the classroom, we cannot eat or drink anything whenever we want. But in Zoom, I could eat anything I wanted while the teacher was lecturing, and the teacher did not say anything. I think this was very nice.”* In his drawing, C-6 stated that he found live lessons in bubbles boring.

Children reflected the emotions they experienced during emergency remote teaching in their drawings most frequently as being sad, followed by longing, finding it boring, and being happy, respectively. Emotions such as sadness, longing, boredom, and happiness, which we frequently encounter in children’s drawings, reflect the complex structure of their inner worlds. Children can show different reactions when they encounter new and challenging situations. It is thought to be normal for children to experience emotions such as sadness, longing, or boredom in a process such as the pandemic, where even adults have high concerns. The inclusion of happy facial expressions in children’s drawings is among the interesting findings. Children reflected in their drawings that they were happy that they could

do the activities they wanted such as eating, playing games, etc. during the lesson. Children may seek support to cope with situations they perceive as challenging or interpret negative conditions as positively as possible (Sapancı & Bahtiyar, 2018). However, studies show that the continuation of education in the home environment creates a distraction in children and therefore they turn to extracurricular activities (Yüksel, 2021; Çakın & Akyavuz, 2020). In conclusion, emotional expressions in children's drawings provide important clues about their inner world.

Interaction

In the study, the coding of children's interactions with their peers and teachers was included in the main category of "Interaction". The main category of interaction was divided into two subcategories 'Positive' and 'Negative'. Table 6 shows the code and frequency information for the main category and subcategories.

Table 6. Codes and Frequencies for the Main Category and Subcategories of Interaction

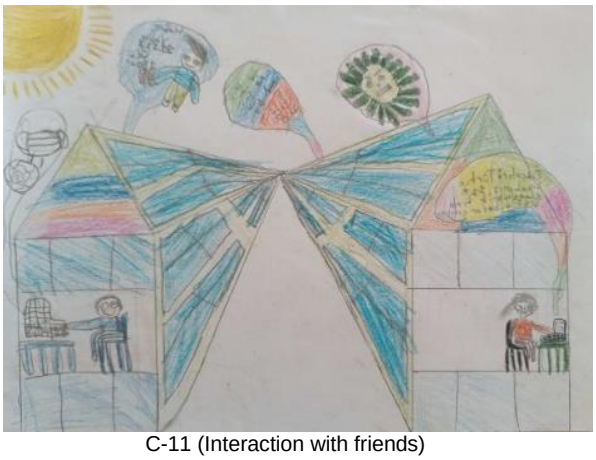
Interaction	Girl (f)	Boy (f)
Positive		
Interaction with the teacher	18	12
Interaction with friends	4	3
Negative		
Teacher's difficulty in classroom management	8	7
Lack of face-to-face interaction	4	7

When Table 6 is examined, there are two codes in the "Positive" subcategory of the main category "Interaction" in the drawings and expressions drawn by the children about their interactions with their peers and teachers during the emergency remote teaching process: "Interaction with the teacher" and "Interaction with friends". In the "Negative" sub-category, there are two codes: "teacher's difficulty in classroom management" and "lack of face-to-face interaction".

Figure 6. Sample drawings related to the main category and subcategories of interaction in emergency remote teaching

Positive Interaction Subcategory

C-9 (Interaction with the teacher)



C-11 (Interaction with friends)

Negative Interaction Subcategory

C-31 (Teacher's difficulty in classroom management)

C-38 (Lack of face-to-face interaction)

Figure 6 shows children's interactions during emergency remote teaching. Children's interaction experiences are divided into two categories positive and negative. When the notes on C-9's drawing paper are analyzed, it is seen that she had a positive interaction experience. C-9 wrote "As you can see in my drawing, our teacher's camera and microphone were always on during the lesson. When we asked questions, he answered them. We could both see and talk to our friends in the classroom." On the other hand, C-11 said, *"I also met with my friends from Zoom outside the class. We talked about how to do homework. I tried to explain that in my drawing."*

The writings of the children on drawing papers to convey their negative interaction experiences were analyzed. C-31 wrote on the paper: "At first, many people attended the lessons. I was seeing my favorite friends; our teacher was doing activities for us to talk to our friends. But then the number of participants decreased. Our teacher stopped doing activities." From C-38's picture and the note she wrote, it was determined that she compared face-to-face education with emergency remote teaching. C-38 said, *"Our class was very fun, live class is not like that at all. I cannot play games with my friends."*

Children mostly reflected 'interaction with the teacher' and then 'interaction with friends' as 'positive interaction' in their drawings. Children's interaction with teachers and friends in their drawings during the emergency remote teaching process emerges as remarkable findings in the fields of educational psychology and child development. These findings support the idea that learning and development take place through social interactions, which underlines Vygotsky's (1978) social constructivism theory. Moreover, Moore's (1989) interaction theory emphasizes that the quality of the learning process in distance education depends on the intensity of the interactions between student-teacher, student-student, and student-content. The findings of this study are confirmed through the interactions that underline Moore's theory. In particular, the frequency and quality of teacher-student interactions were positively emphasized in children's drawings. This is a finding that supports Moore's findings on the importance of student-teacher interactions. At the same time, the fact that inter-student interactions have an important place in the drawings shows that student-student interaction is critical for the learning process in distance education. As negative interactions, children mostly reflected 'teacher's difficulty in classroom management' and 'lack of face-to-face interaction' in their drawings. Recent studies reveal that teachers experience difficulties in managing the classroom with online education, especially due to their lack of technology literacy (Arslan & Şumuer, 2020; Baran & Sadık, 2021; Başaran et al., 2021). In Akdeniz and Uzun's (2022) study, it was found that teachers experienced problems such as not being patient, not using body language, having communication problems, and not making eye contact during the process of interacting with students in online courses. Teachers' difficulties in classroom management and the lack of face-to-face interaction, which children reflect as negative interactions, suggest the importance of each of the interaction dimensions in Moore's theory and how the quality of

these interactions can be maintained or increased, especially in challenging distance education environments.

Problems Encountered

In the study, the main category of "Problems Encountered" was used about the issues that children had difficulties in the emergency remote teaching process. The main category of "Problems Encountered" was divided into two subcategories: "Technical Problems" and "Health Problems". Table 7 presents code and frequency information for the main category and subcategories.

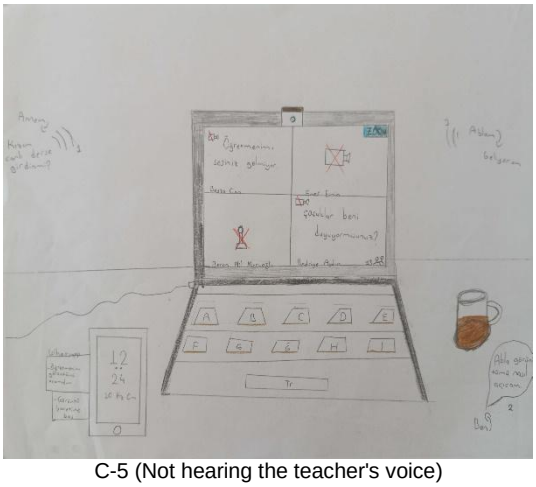
Table 7. Codes and Frequencies Related to the Main Category and Subcategories of Problems Encountered

Problems Encountered	**Girl (f)**	**Boy (f)**
Technical Problems		
Cannot open the camera	27	13
Unable to connect to the Internet	19	7
Not hearing the teacher's voice	8	3
Power outage	5	2
Health Problems		
Headache	3	4
Eye fatigue	3	2
Distraction	4	7

When Table 7 is examined, in the drawings and expressions drawn by the children about the problems they encountered in the pandemic, there are four codes in the "Technical Problems" subcategory of the main category "Problems Encountered": “not being able to connect to the internet", "not being able to hear the teacher's voice", "not being able to turn on the camera", “power outage” and three codes in the "Health Problems" subcategory: "headache", "eye fatigue" and "distraction".

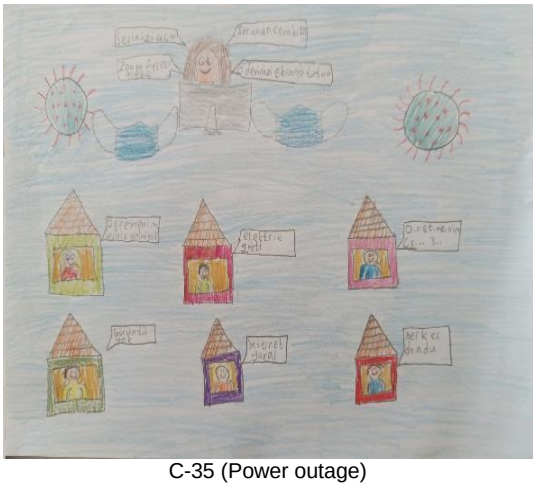
Technical Problems

C-106 (Unable to connect to the Internet)



C-5 (Not hearing the teacher's voice)

C-85 (Cannot open the camera)



C-35 (Power outage)

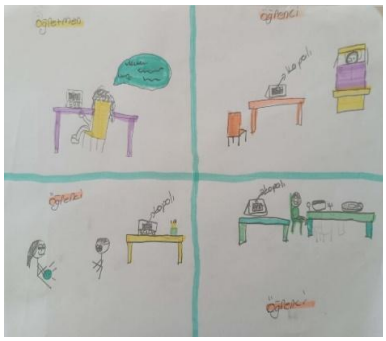
Figure 7. Sample drawings related to technical problems encountered in emergency remote teaching

Figure 7 shows the technical problems faced by sample children during emergency remote teaching. While C-106, one of the children who participated in the study, wrote *"Sometimes I could not attend the lesson at all because I could not connect to the Internet. Sometimes I was upset because the Internet was disconnected during the lesson."*, C-5 emphasized that the microphone icon was turned off in his drawing and wrote *"Teacher, I cannot hear your voice"* in the bubble. Similarly, in C-85's drawing, *"Teacher, your voice is not coming"* and *"I cannot turn on the camera"* were written in the bubble. In his drawing, C-35 draws attention to the technical problems experienced in the emergency remote teaching process. In addition to the mentioned problems, C-35 includes the problem of power outage in his drawing.

Figure 8. Sample drawings related to technical problems encountered in emergency remote teaching

C-20 (Headache)

C-109 (Eye Fatigue)



C-53 (Distraction)

Figure 8 shows the health problems children face during emergency remote teaching. Among the children who participated in the study, C-20 wrote *"My head hurts a lot. I can't stand being in front of the TV all the time."* While C-109 reflected a happy facial expression when she first entered the class, she drew an unhappy and reddened face one hour after the class. C-109 wrote on the back of the paper, *"It is enjoyable to listen to lessons on EBA, but when I spend some time, my eyes get very tired, and I am afraid that I will go blind."* Looking at the drawing of C-53, it is seen that children experience distraction in distance education lessons. C-53 wrote on the back of his paper: *"Our teacher thought that everyone was listening to him in class, but some of my friends were playing games. Some of them were looking at other things on the computer turning off their cameras and sleeping. I tried to explain this in my drawing."*

It shows that children face technical problems such as not being able to connect to the internet, not being able to hear the teacher's voice, power outages and not being able to turn on the camera during

the emergency remote teaching process. Similarly, the study results of Vachkova et al. (2022) also show that children face technical problems such as hearing the teacher, using programs, late uploading of course materials to the system, and not being able to connect to Zoom. Previous studies show that there is a directly proportional relationship between screen exposure time and headaches and that the health problems experienced by children during the distance education process are due to factors such as technical problems, distractions from the environment, prolonged screen exposure, social isolation, and communication difficulties (Basdav et al., 2016; Montagni et al., 2016; Panigrahi et al., 2020). Ranasinghe et al. (2016) stated that the displacement and adaptation that the eye muscles endure for a long time cause stress on the muscles and cause headaches by tiring the eyes. The findings of this study are consistent with the findings of previous studies and show that children reflect health problems such as eye fatigue, headache, and distraction in their drawings about the distance education process.

Conclusion and Suggestions

Analyzing the drawings of 9–10-year-old children about the emergency remote teaching they experienced during the pandemic process, was aimed to reveal their perceptions on this subject. According to the results obtained, it was observed that children drew themselves, their teachers, their friends, and their families as human figures, respectively. The fact that children emphasized themselves and teacher figures in their drawings shows their importance in education and the guidance role of teachers. In addition, the representations of friends and family emphasize the value of social interaction and family support. These results are in line with the Community of Inquiry Theory. Instructional presence points to the teacher's leadership role in the distance education process and social presence points to the importance of children's participation in the community. The lack of these social elements in the distance education process may cause children to feel loneliness and social isolation. Therefore, the social interaction of children in the education process has become more evident with the widespread use of emergency remote teaching during the pandemic. Therefore, to overcome the challenges that children may face in the emergency remote teaching process, such as loneliness, social isolation, and lack of communication, strategies to improve instructional presence and sense of community should be implemented.

It is observed that children most frequently added their rooms, school, common areas of the house, and classrooms to their drawings. This helps us understand how children reacted to the changes during the pandemic and which places they missed. School is not only a center of academic learning for students, but also an environment where social interaction and friendships develop. School closures during the pandemic have limited opportunities for students to interact face-to-face with their peers, which has increased feelings of social isolation. Furthermore, school routines and structured learning environments provide order and discipline in students' daily lives. It is thought that distance education may cause disorganization, especially in primary school children, and may have negative effects on time management and motivation to learn. Teachers and school staff are key figures supporting students' academic and personal development. Being deprived of this support during the pandemic may affect students emotionally. Therefore, it can be said that missing school during the pandemic is not only limited to academic learning but also a critical factor for social and emotional development. The results of the study, when the children's drawings and textual expressions are analyzed, show that the children who drew the common areas at home generally came from lower-income families, did not have enough space in their homes, and had to share the same space with their parents who worked at home. Simonson et al. (1999)'s Equivalence Theory states that "Appropriate distance education practices should provide equivalent learning experiences for both local and distance learners for the expected equivalent outcomes of the educational experience". However, the results of the study show that children from families with low socio-economic status do not have equal opportunities with other children during the pandemic. In such situations, policymakers need to make decisions that will ensure that all children who receive education through distance education have equal opportunities.

According to the results of the study, children generally prefer laptops and desktop computers in emergency remote teaching. It can be said that this is an understandable preference due to their large screens and advanced features that facilitate learning. At the same time, the existence of educational television programs such as EBA TV shows that it is an important resource, especially for children with limited internet access. Therefore, such programs should be designed in a way to ensures children's interest, motivation, and continuity. The fact that children rarely use smartphones in their drawings may be because most children in this age group do not have their phones and parents' hesitations that the use of these technological devices by children is harmful. Considering this situation, parents and teachers can be trained on how children can use technology safely and effectively in education.

Children's drawings show that applications such as Zoom, EBA, and WhatsApp are widely used in emergency remote teaching. The urgent shift to distance education due to the pandemic has led education policymakers, administrators, and teachers to seek new solutions. In this context, platforms such as Zoom and EBA have been used effectively to ensure continuity of education and facilitate the rapid adaptation of both children and teachers to this new situation. It was found that WhatsApp was preferred to communicate when students and teachers could not connect to Zoom or EBA. Considering this situation, educational institutions and teachers can be trained on technological tools used in distance education. In addition, alternative ways of communication to deal with technical problems on various platforms can be developed and introduced to students and instructors. Thus, the educational process can be prevented from being interrupted due to any technical problems.

During the emergency remote teaching process, it was observed that children reflected the emotions they felt in their drawings as sadness, longing, boredom, and happiness. Emotions such as sadness, longing, boredom, and happiness seen in children's drawings show their complex inner worlds. It is quite normal for children to experience these emotions, especially in difficult times such as the pandemic when even adults are worried. It was found that a small number of children drew happy facial expressions in their drawings. Children reflected in their drawings that they were happy to be able to do activities such as eating and playing games during the lesson. In this process, it can be concluded that parents and educators should better understand and support children's emotional needs. Considering the emotional fluctuations experienced by children during the emergency remote teaching process, it is necessary to organize activities that will provide them with more social interaction and emotional support. By using the clues in children's drawings, educators can better understand their emotional states and develop their pedagogical approaches accordingly. In times of painful emotional states such as the pandemic, activities with children must focus on developing both their academic skills and emotional resilience.

In the results of the study, children's interactions with their peers and teachers during the emergency remote teaching process were positive and negative. As positive interactions, the most common interaction was with the teacher, followed by interaction with friends. Emphasizing the interactions with teachers and friends in children's drawings reveals the importance of these relationships in their social and academic learning. As negative interactions, children mostly reflected 'the teacher's difficulty in classroom management' and 'the lack of face-to-face interaction' in their drawings. The negative interaction experiences in the emergency remote teaching process reflected by children in their drawings are an important source of feedback for teachers and policymakers. Teachers' difficulties in classroom management, low attendance, and lack of face-to-face interaction reveal the challenges of emergency remote teaching. These findings suggest that in addition to the use of technology in education, teacher training, and pedagogical approaches are important.

The results of the study reveal the technical and health problems that children face in the emergency remote teaching process. Technical difficulties such as internet connection problems, inaudibility of the teacher's voice, power outages, and camera problems were identified as important factors affecting the fluency of emergency remote teaching. In this context, it is recommended that educational institutions and relevant policymakers establish a system where students and teachers can receive technical support. This system can provide a quick and effective solution and ensure that the educational process

continues uninterrupted. Likewise, health problems such as eye strain, headache, and distraction mentioned in the children's drawings emphasize the possible physical and mental effects of emergency remote teaching. This suggests that ergonomic working conditions should be ensured, and screen time should be planned in a balanced way to reduce the health impacts of the educational process. It would be useful to inform students and parents about healthy habits such as taking regular breaks, eye exercises, and physical activities. Implementation of these recommendations may contribute to a more efficient and healthy emergency remote teaching process.

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Data Accessibility Statement

The data that support the findings of this study are available from [third party name] but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of [third party name].

Ethics and Consent

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