K-12 TEACHERS' PERCEIVED EXPERIENCES WITH DISTANCE EDUCATION DURING THE COVID-19 PANDEMIC: A META-SYNTHESIS STUDY

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ABSTRACT

A sudden shift to distance education during the COVID-19 pandemic in Turkiye strained teaching and learning activities, placing K-12 teachers in a novel context with challenges and opportunities to investigate. This study explores the teaching experiences and opinions of K-12 teachers during the COVID-19 pandemic, focusing on challenges, advantages, and suggestions. Search queries were executed in leading databases (DergiPark, ULAKBIM TRDizin) to locate potential studies. Twenty-two studies meeting the predetermined inclusion and exclusion criteria were subjected to a rigorous and iterative thematic analysis using the qualitative meta-synthesis approach. The results revealed significant challenges categorized into ten themes: shortcomings in technology and infrastructure, student motivation and engagement, technology literacy, and social and emotional well-being. The results also highlighted key advantages of distance education in eight categories such as learning improvement, flexibility and convenience, and digital tools and resources. Additionally, the study identified valuable suggestions that contribute to the success of distance education, such as adapting curriculum, increasing access to technology, strengthening internet infrastructure, providing teacher training and support, developing engaging and interactive instructional materials, and improving communication and collaboration between students and teachers. The study results inform the development of evidence-based practices and policies that can support K–12 teachers in providing quality online education during times of crisis.

Keywords: COVID-19, distance education, challenges, benefits, K-12 teachers, meta-synthesis.

INTRODUCTION

Recent natural catastrophes in Turkiye, particularly earthquakes, have rendered schools inaccessible or unsafe, making distance education an alternative method of education delivery, as in COVID-19. It is well known that the COVID-19 epidemic has posed enormous problems for the world, impacting several facets of life, including education (Pokhrel & Chhetri, 2021). Worldwide, schools and universities have been forced to close temporarily, and governments have resorted to distance education to ensure the continuity of learning (Tadesse & Muluye, 2020). The need to keep students and teachers safe while allowing them to engage in academic activities forced the shift toward distance education (Papi, 2020). In this context, distance education refers to delivering instruction and learning through digital technologies that allow learners and teachers to be in different locations (Dede, 1990).

Numerous benefits of distance education have been demonstrated, including flexibility, convenience, cost-effectiveness, and scalability (Mupinga, 2005). Distance education can reach more students and allow them to learn at their own pace (Freire et al., 2021). Furthermore, distance education can provide chances for higher education and professional growth by granting students access to educational resources that are not available in their physical location (Kovalevsky et al., 2014). In a meta-analysis of 99 studies, Means et al. (2013) found that distance education can produce the same or more significant learning outcomes than traditional face-to-face instruction.

Despite its benefits, distance education presents teachers and students with several challenges, particularly in the context of the COVID-19 epidemic. Some challenges include a lack of access to technology and reliable Internet, isolation and social disconnection, and difficulty ensuring student engagement and motivation (Sari & Nayir, 2020). Teachers have also reported challenges in adapting to new teaching methods, the lack of training and support, and increased workload (Ferri et al., 2020).

Several potential solutions have been proposed to address these difficulties. These solutions include increasing access to technology and internet infrastructure, providing teacher training and support, developing more engaging and interactive instructional materials, and improving communication and collaboration between students and teachers (Kara et al., 2019). However, the effectiveness of these solutions in enhancing the experiences of K-12 teachers with distance education needs to be clarified, and there is a need for a more in-depth examination of the issue.

Despite the growing recognition of the significance of distance education as a means to ensure continuity of learning under challenging circumstances, there is a need for more reviews that examine its application and efficacy in post-disaster settings in Turkiye. While several studies have examined students' experiences with distance education, few have examined teachers' experiences (Stewart & Lowenthal, 2022). Furthermore, a more comprehensive and holistic approach is necessary to capture the experiences and needs of K-12 teachers directly involved in imparting education through distance modalities to obtain a deeper understanding of its implementation, challenges, and efficacy.

Consequently, the purpose of this study was to conduct a meta-synthesis of qualitative studies to explore the experiences of K–12 teachers with distance education during the COVID-19 pandemic. Specifically, this study aims to answer the following research questions:

1. What are the experiences of K–12 teachers regarding the significant challenges they face in distance education during the COVID-19 pandemic?
2. What are the benefits of distance education perceived by K–12 teachers during the COVID-19 pandemic?
3. What are the suggestions of K-12 teachers regarding improving distance education during the COVID-19 pandemic?

METHOD

This study used a meta-synthesis methodology to analyze and synthesize qualitative studies that explore K–12 teachers' experiences with distance education during the COVID-19 pandemic. Predetermined inclusion and exclusion criteria were followed to ensure a relevant and comprehensive sample.

The inclusion criteria for the study sample were qualitative or mixed-methods studies that discussed K–12 teachers' opinions on distance education during the COVID-19 pandemic, the challenges they faced during distance education, and the solutions they proposed. Exclusion criteria included studies that focused on the experiences of a different audience than K–12 teachers or were conducted before the pandemic. The inclusion and exclusion criteria used to select the studies are presented in Table 1.

Table 1. Inclusion/exclusion criteria

Criteria	Inclusion	Exclusion
Study Type	Qualitative or mixed-method studies	Other study types (e.g., quantitative studies)
Participant Focus	K–12 teachers	Studies focusing on other audiences
Topic Focus	Discussions on K–12 teachers' opinions, challenges, and solutions in distance education during the COVID-19 pandemic	Studies unrelated to K–12 teachers or conducted before the pandemic

Two leading platforms for scholarly publications in Turkiye, DergiPark, and ULAKBIM TRDizin databases, were used for conducting a comprehensive search to identify relevant studies. The search query meticulously detailed in Table 2 was employed for this purpose.

Table 2. Research Corpus and Search Queries for Inclusion Criteria

Research Corpus	
Database	DergiPark, ULAKBIM TRDizin
Period	No limit
Search Queries	
Subject-specific queries	KEYWORDS ("teachers" OR "educators" OR "instructors" OR "teaching professionals" OR "pedagogues" OR "faculty members" OR "academic staff" OR "teaching staff" OR "educational practitioners" OR "instructional specialists")
Field-specific queries	KEYWORDS ("distance education" OR "distance learning" OR "distance teaching" OR "online education" OR "online learning" OR "online teaching" OR "remote education" OR "remote learning" OR "remote teaching")
Context-specific queries	KEYWORDS ("elementary" OR "primary" OR "secondary" OR "school" OR "classroom" OR "K-12" OR "K12")
Boolean search parameter	AND

These databases were selected because they are considered the most comprehensive and reliable sources of Turkish-language research articles in education. In addition, the Google Scholar database was also utilized as an additional source of information. By employing multiple databases, the aim was to ensure the comprehensiveness of the search and increase the likelihood of identifying all relevant studies in the Turkish language. The initial search yielded 212 articles of which 168 unique articles were placed after removing duplicates. These articles were then screened based on their abstracts, resulting in the selection of 41 relevant articles. Subsequently, a full-text review was conducted, including 22 studies that met the criteria. A summary of these articles can be found in Table 3 below. Throughout these processes, two researchers coordinated the efforts. The inter-rater reliability of the selection process was assessed using Cohen's Kappa coefficient (κ), revealing substantial agreement between the two reviewers ($\kappa = 0.75$).

Table 3. Summary of the Articles Examined in the Study

Article ID	Reference	Methodology	Purpose	Participants	Sampling	Data Collection
1	(Gullu et al., 2022)	Mixed Method Research	Identify and provide solutions to problems faced by teachers during the COVID-19 period in distance education.	201 Teachers	Simple Random Sampling and Convenience Sampling	Survey and Semi-Structured Interviews
2	(Taskin & Aksoy, 2021)	Mixed Method Research (Parallel Design)	Objectively reveal teachers' opinions and expectations regarding distance education.	292 Teachers	Purposive Sampling and Maximum Variation Sampling	Survey and Semi-Structured Interviews
3	(Sertkaya Dinler & Dundar, 2019)	Qualitative Phenomenological Study	Highlight the problems experienced by classroom teachers during the pandemic.	40 Classroom Teachers	Convenience Sampling	Semi-Structured Online Interviews
4	(Sahin & Aykac, 2022)	Qualitative Study	Evaluate the perspectives of secondary school foreign language teachers on the implementation of distance education and the challenges encountered.	14 Foreign Language Teachers	Convenience Sampling	Semi-Structured Interviews
5	(Askan & Usta, 2022)	Qualitative Study	Investigate the challenges, effectiveness, and perspectives of information technology teachers affiliated with the Ministry of National Education concerning distance education.	21 ICT Teachers	Criterion Sampling	Semi-Structured Interviews
6	(Alper, 2020)	Qualitative Explanatory Case Study	Examine the transition processes to distance education in K-12 schools without prior experience.	71 Teachers	Convenience Sampling	Semi-Structured Interviews, Observations, Field Notes
7	(Tunca & Bay, 2022)	Qualitative Study	Uncover preschool teachers' views on distance education in the context of the Covid-19 outbreak.	17 Preschool Teachers	Convenience Sampling and Criterion Sampling	Semi-Structured Interviews
8	(Demir & ozdas, 2020)	Qualitative Case Study	Investigate the opinions of primary school teachers regarding distance education activities during the COVID-19 period.	44 Classroom Teachers	Typical Case Sampling	Surveying Open-Ended Questions
9	(Aral & Kadan, 2021)	Qualitative Phenomenological Study	Identify the problems encountered by preschool teachers in their distance education practices during the COVID-19 pandemic.	24 Preschool Teachers	Purposeful Sampling	Semi-Structured Interviews
10	(Shaikh & Ozdas, 2022)	Qualitative Phenomenological Study	Evaluate English teachers' perspectives on distance education, considering the Covid-19 pandemic, and provide recommendations.	24 English Teachers	Convenience Sampling	Semi-Structured Interviews
11	(Yazici et al., 2022)	Qualitative Phenomenological Study	Examine preschool teachers' views on distance education during the COVID-19 pandemic.	28 Preschool Teachers	Purposeful Sampling	Semi-Structured Interviews
12	(Usta & Donmez, 2021)	Qualitative Phenomenological Study	Learn elementary school teachers' opinions on COVID-19 educational activities.	20 Classroom Teachers	Convenience Sampling	Semi-Structured Interviews
13	(Altin & Gundogdu, 2021)	Qualitative Case Study	Investigate remote education practices in early childhood education based on preschool teachers' views.	21 Preschool Teachers	Convenience Sampling	Semi-Structured Interviews
14	(Yolcu & Kurt, 2021)	Sequential Explanatory Mixed Method Research	Identify problems EBA-positive teachers face using the EBA live lesson application during COVID-19.	96 Teachers	Convenience Sampling and Purposeful Sampling	EBA Attitude Scale and Semi-Structured Interviews

15	(Bakirci et al., 2021)	Qualitative Case Study	Determine middle school teachers' opinions on distance education.	12 Teachers	Convenience Sampling	Semi-Structured Interviews
16	(Mutluer & Celikoz, 2022)	Sequential Exploratory Mixed Method Research	Understand teachers' views on distance education in Turkiye during the pandemic and assess generalizability.	729 Classroom Teachers	Convenience Sampling and Purposeful Sampling	Semi-Structured Interviews
17	(Cetinkaya & Elalmis, 2022)	Qualitative Case Study	Reveal teachers' opinions on initial reading and writing instruction during distance education.	5 Classroom Teachers	Purposive Sampling with Random Selection	Semi-Structured Focus Group Interviews
18	(Dere & Akkaya, 2022)	Qualitative Phenomenological Study	Evaluate remote social studies lessons based on teachers' experiences.	14 Social Science Teachers	Maximum Variation Sampling	Semi-Structured Interviews
19	(Gozde & Gulsen, 2021)	Qualitative Case Study	Assess the impact of the Covid-19 pandemic on education from teachers' perspective.	25 Teachers	Criterion Sampling	Surveying Open-Ended Questions
20	(Yapar et al., 2022)	Qualitative Phenomenological Study	Gather teachers' views on online distance education experiences through the EBA platform during COVID-19.	16 Teachers	Convenience Sampling	Surveying Open-Ended Questions
21	(Yilmaz & Aydogdu, 2022)	Qualitative Phenomenological Study	Investigate science teachers' opinions and experiences with online lessons during the COVID-19 pandemic.	15 Science Teachers	Maximum Variation Sampling	Semi-Structured Phone Interviews
22	(Erol & Akkus, 2022)	Qualitative Phenomenological Study	Examine problems experienced by teachers in distance education.	12 Teachers	Convenience Sampling	Semi-Structured Interviews

Thematic analysis was employed using MAXQDA 2022 (VERBI Software, 2021) to analyze the data from the selected studies and identify common themes and patterns related to K–12 teachers' experiences with distance education during the COVID-19 pandemic. This analysis identified the challenges and benefits of distance education and the best practices and recommendations offered by K–12 teachers. Thematic analysis was conducted by two independent researchers who reached a consensus on the final themes and sub-themes. Cohen's Kappa coefficient (κ) was calculated to assess inter-rater reliability, and a high level of agreement was found ($\kappa = 0.81$).

This study implemented specific procedures to ensure a comprehensive quality assessment of the selected studies. These procedures included establishing clear criteria for assessment, evaluating methodological rigor, assessing the credibility of findings, documenting the process transparently, and involving multiple reviewers to achieve consensus and reliability. By following these procedures, the study enhanced the trustworthiness and rigor of the quality assessment, thereby strengthening the reliability and validity of the synthesized findings.

Overall, several procedures were followed to ensure the trustworthiness of the study itself. First, the inclusion and exclusion criteria were predetermined and clearly stated. Second, the search process was documented to ensure transparency and reproducibility. Third, two reviewers independently carried out the screening process and Cohen's Kappa coefficient (κ) was calculated to assess inter-rater reliability. Fourth, the selected studies were subjected to rigorous quality assessment to ensure their validity and reliability. Finally, the data synthesis process was carried out by multiple researchers and Cohen's Kappa coefficient (κ) was calculated to assess inter-rater reliability.

In summary, this meta-synthesis study explored K–12 teachers' experiences with distance education during the COVID-19 pandemic. The study followed predetermined inclusion and exclusion criteria and employed a meta-synthesis methodology. Thematic analysis was used to synthesize the data and the study followed several procedures to ensure its trustworthiness, including calculating Cohen's Kappa coefficient (κ) to assess inter-rater reliability. The study contributed to evidence-based practices and policies that can support K–12 teachers in providing quality online education during times of crisis.

FINDINGS

In the results section, the outcomes of the study on distance education are presented, with a comprehensive analysis under various subheadings. First, the positive aspects of distance education are discussed, highlighting its potential to enhance accessibility and flexibility in learning. Subsequently, the various challenges encountered during the implementation of distance education are examined, encompassing technological issues, student engagement, and the importance of effective instructional design. Furthermore, recommendations are provided to address these challenges and improve the overall effectiveness of distance education.

Benefits

The current study showed that the benefits of distance education fall into eight themes: (1) learning improvements/support; (2) flexibility and convenience; (3) digital tools and resources; (4) student engagement and self-motivation; (5) accessibility and inclusivity; (6) classroom management; (7) sustainability and continuity; and (8) parental involvement. As shown in Table 4, each of these themes has several corresponding subthemes, which are described and reported below more comprehensively.

Table 4. Benefits of Distance Education

Theme/Subtheme	Article	n
LEARNING IMPROVEMENTS/SUPPORT		14
Allows individual learning	2, 10, 15, 19	4
Strengthens the communication between teachers and students	6, 10, 15	3
Appeals to different sense organs	2, 15	2
Increases the form and variety of learning	2, 6	2
Makes learning more efficient	8, 19	2
Enables students to increase their digital literacy skills	18	1
FLEXIBILITY AND CONVENIENCE		13
Eliminates the space and time problem	2, 6, 11, 15, 18, 19	6
Provides a comfortable learning environment	6, 10, 11	3
It reduces distracting external factors	4, 6, 10	3
Offers flexible working opportunities	10	1
DIGITAL TOOLS AND RESOURCES		9
Allows various educational materials and tools	4, 6, 11, 17, 18, 21	6
Allows teachers to use technology more actively in their lessons	6, 17, 21	3
Allows teachers to discover new tools for teaching and learning	11, 21	2
STUDENT ENGAGEMENT AND SELF-MOTIVATION		9
Increases students' interests and motivation	8, 10, 11, 21	4
Enables students to focus more easily	4, 6, 10	3
Enables students to have self-discipline	11	1
Increases students' participation in the lesson	7	1
ACCESSIBILITY AND INCLUSIVITY		9
Allows the course to be recorded and accessed repeatedly	6, 7, 18	3
Provides the opportunity to reach many students at the same time	15, 18	2
Provides fast access to information	2, 15	2

Provides convenience to disadvantaged students	18	1
Provides access to resources from a single point	2	1
CLASSROOM MANAGEMENT		8
Allows teachers to use class time more effectively	2, 5, 6, 11, 15, 19, 21	7
Enables teachers to improve classroom management	21	1
SUSTAINABILITY AND CONTINUITY		8
Ensures the reuse of educational resources	2, 6, 7, 18	4
Reduces the cost of education	2, 11	2
Allows the continuation of education in crises	18, 19	2
PARENTAL INVOLVEMENT		3
Enables families to be involved more in education processes	16, 19	2
Allows parents to spend more time with their children	16	1

Learning improvements and support: Distance education made it feasible for students to learn at their own speed and meet their specific learning needs (n = 4). It also strengthened communication between teachers and students, allowing for increased interaction and feedback (n = 3). Moreover, the integration of distance education appealed to different senses, providing learners with diverse learning modes (n = 2). Additionally, distance education increased the form and variety of learning, providing access to various educational materials and resources (n = 2). Distance education also made learning more efficient (n = 2), achieved through technology and other digital tools, which streamlined the learning process and made it more accessible to students. Finally, distance education enabled students to increase their digital literacy skills, allowing them to develop and enhance their technological competencies (n = 1).

Flexibility and convenience: Distance education eliminated space and time constraints, allowing students to access educational materials and participate in classes from any location and at any time (n = 6). It also provided a comfortable learning environment, enabling learners to study in a familiar and calm setting that suited their preferences (n = 3) and minimized external variables such as noise and interruptions that could impede learning (n = 3). Besides, distance education enabled learners to study at their own pace and on their own timetable, making it simpler to balance educational pursuits with personal or professional obligations (n = 1).

Digital tools and resources: Distance education allowed for a variety of educational materials and tools to be utilized, providing students with access to various resources (n = 6). This use of technology also allowed teachers to incorporate technology into their lessons actively, making the learning process more engaging and interactive (n = 3). Additionally, integrating digital tools and resources enabled teachers to discover new tools for teaching and learning, increasing their technological competencies and skills (n = 2).

Student engagement and self-motivation: Distance education increased students' interest and motivation, making learning more pleasant and efficient (n = 4). In addition, using digital tools and resources in distance education facilitated students' ability to concentrate and cultivate self-discipline (n = 4). Furthermore, distance education increased student participation in the lesson, as motivated students are more likely to engage in class discussions and activities (n = 1).

Accessibility and inclusivity: Distance education allowed courses to be recorded and accessed multiple times, allowing students to review course material at their own pace (n = 3). It also made it possible to reach lots of students simultaneously, regardless of their location, thereby expanding access to education (n = 1). In addition, using digital devices enabled quick access to information, leading to more efficient and effective learning (n = 1). Additionally, the convenience of distance education made it more accessible to disadvantaged students, providing them with equal educational opportunities (n = 1). In addition, distance education enabled access to diverse resources from a single location, consequently decreasing learning barriers

and increasing inclusivity (n = 1).

Classroom management: Distance education allowed teachers to use class time more effectively, as technology facilitated the management of class activities and the organization of content delivery (n = 7). Moreover, integrating digital tools and resources gave teachers a better understanding of classroom management techniques and practices, allowing them to manage their virtual classrooms (n = 1) more effectively.

Sustainability and continuity: Integrating digital tools and resources in distance education ensured the reuse of educational resources, thereby reducing waste and promoting sustainability (n = 4). In addition, distance education reduces the cost of education by minimizing the need for physical infrastructure and travel expenses, making education more accessible and affordable (n = 2). Finally, distance education allowed for continuing education in crises, such as natural disasters or pandemics, ensuring that students could continue their studies uninterrupted (n = 2).

Parental involvement: Distance education allowed for increased family involvement in the education process, providing them with more significant opportunities to participate in their children's learning experiences (n = 2). Moreover, the flexibility of distance education motivated parents to spend more quality time with their children, as they can monitor their children's learning progress and provide additional support as needed (n = 1).

Challenges

The current review study identified significant challenges in distance education and grouped them into ten meaningful themes. Each theme is accompanied by several relevant subthemes, as shown in Table 5.

Table 5. Challenges of Distance Education

Theme/Subtheme	Article	n
TECHNOLOGY AND INFRASTRUCTURE		61
Limited access to technology such as the Internet, software, and hardware	1, 2, 3, 4, 5, 6, 8, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22	19
Inadequate internet connectivity	1, 2, 3, 4, 5, 7, 8, 10, 11, 15, 16, 18, 19, 20, 21, 22	16
Technical difficulties and glitches	2, 4, 5, 8, 9, 10, 11, 16, 20, 21	10
LMS-related issues such as language support and effectiveness	1, 2, 3, 4, 8, 10, 11, 15, 18, 19, 20	11
The lack of technical support	1, 2, 4, 10, 11	5
STUDENT MOTIVATION AND ENGAGEMENT		47
Difficulty keeping students engaged	1, 2, 3, 4, 5, 6, 8, 9, 10, 13, 14, 15, 16, 18, 19, 20, 22	17
Difficulty keeping students motivated	1, 2, 3, 4, 5, 6, 8, 9, 10, 13, 14, 18, 19, 22	14
Distraction and lack of focus in students	2, 3, 7, 8, 10, 13, 14, 22	8
The low attendance of students in classes, especially in rural areas	15, 18, 21, 22	4
Students' lack of interest	15, 16, 19, 20	4
TECHNOLOGY LITERACY		30
Teachers' and students' lack of technology literacy skills	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 18, 19, 20	14
The limited prior knowledge of distance education	3, 4, 5, 6, 7, 8, 10, 19	8
Challenges in adapting to distance education	3, 4, 5, 6, 7, 8, 10, 19	8
SOCIAL AND EMOTIONAL WELL-BEING		30
Physical health problems	1, 2, 3, 6, 10, 11, 14, 15, 16, 22	10
Isolation and psychological problems	1, 2, 3, 6, 10, 11, 14, 15, 16, 22	10
Technological addiction in students	3, 7, 8, 11, 15, 22	6
Privacy violation	1, 2, 4, 18	4

CLASSROOM MANAGEMENT		25
Inadequate home environment	4, 5, 8, 10, 11, 15, 18	7
Increased workload for teachers	2, 6, 8, 10, 11, 19	6
Challenges with maintaining discipline	2, 3, 6, 10, 19, 21	6
Challenges with managing student behaviors	2, 3, 6, 21	4
Time-consuming	8, 22	2
LEARNING CHALLENGES		21
Lack of teacher and peer support	2, 3, 5, 6, 10, 11, 16, 19, 21, 22	10
Challenges in achieving implicit learning	1, 3, 5, 8, 10, 11, 15	7
Challenges in understanding the subject matter	15, 18, 19, 22	4
SOCIAL INTERACTION AND COLLABORATION		21
Limited communication and social interaction	1, 2, 3, 5, 6, 7, 10, 11, 15, 16, 17, 18, 19, 21, 22	15
Limited collaboration	5, 7, 10	3
Difficulty building relationships	2, 5, 10	3
ASSESSMENT AND EVALUATION		17
Difficulty conducting assessment and evaluation	1, 4, 8, 9, 10, 11, 18	7
Challenges in measuring and evaluating students' progress	14, 16, 18, 22	4
Concerns about cheating and academic integrity in assessments	2, 4, 10	3
Inadequate assessment and evaluation tools	10, 16, 18	3
ADMINISTRATIVE AND POLICY ISSUES		16
Insufficient class time	15, 18, 20, 21, 22	5
Limited educational recourses	3, 4, 12, 14	4
Unsuitable courses for distance education	2, 4, 5, 21	4
Challenges with online instructional design	10, 15, 22	3
PARENTAL INVOLVEMENT AND SUPPORT		17
Challenges with parental engagement	3, 8, 9, 13, 14, 15, 16, 17, 18, 22	10
Parents' lack of knowledge of technology use	14, 16, 17, 20	4
Communication challenges with parents	18, 19, 22	3

Technology and infrastructure: Limited access to technology was widely reported (n = 19), indicating that some students and teachers did not have the necessary hardware, software, or equipment to participate in online classes effectively. Inadequate internet connectivity was another major issue (n = 16), with several studies highlighting the impact of slow or unstable Internet on teaching and learning. Multiple studies (n = 10) reported technical difficulties and glitches, including software malfunctions, system errors, and connection problems. In addition, several studies (n = 11) underlined LMS-related issues such as language support and effectiveness, indicating that some platforms and tools used in distance education may not meet the needs of all users. The lack of technical support was also highlighted (n = 5), with some studies reporting that students and teachers did not receive sufficient assistance when facing technical problems.

Student motivation and engagement: Many studies (n = 17) reported difficulties keeping students engaged and motivated, with various factors contributing to this challenge, such as the absence of face-to-face interaction, lack of social support, and limited interaction with peers and teachers. Distraction and lack of focus in students were also reported (n = 8), with studies indicating that students may face various

distractions and barriers, such as competing priorities, limited resources, and difficulty in managing time. Besides, several studies (n = 4) reported low attendance of students in classes, particularly in rural areas, indicating a lack of interest or difficulties in accessing distance education opportunities. Students' lack of interest was highlighted in a few studies (n = 4), indicating a need to design engaging and meaningful activities that promote students' interest and motivation in distance education.

Assessment and evaluation: Several studies (n = 7) reported difficulties adapting traditional methods of evaluation to the online environment. Measuring and evaluating students' progress was also underlined (n = 4), indicating that some assessment methods may not be suitable for assessing online learning outcomes. Additionally, few studies (n = 3) reported teachers' concerns about cheating and academic integrity in assessments, underscoring the challenge of ensuring academic integrity while monitoring students in a virtual environment. Some studies (n = 3) pointed to inadequate assessment and evaluation tools, indicating a need for further development of tools and strategies for assessment and evaluation in distance education.

Social interaction and collaboration: Limited communication and social interaction were widely reported (n = 15), with several studies indicating that distance education may hinder students' ability to interact with their peers and teachers. In addition, some studies (n = 3) identified limited collaboration as a significant challenge (n = 3), reporting that distance education may limit students' opportunities to collaborate on group projects or complete assignments jointly. Moreover, few studies (n = 3) reported difficulties in establishing relationships in the online environment, indicating that the absence of face-to-face interaction and nonverbal signals make it more difficult for students to develop relationships with their peers and teachers.

Social and emotional well-being: Many studies (n = 10) reported that extended periods of inactivity and prolonged exposure to screens have led to physical health issues such as head, neck, and back pain. This is a particular concern for students and teachers who attend classes online for long periods of time (e.g., several hours a day). Isolation and psychological problems, including anxiety, stress, emotional deprivation, increased isolation and loneliness, mental exhaustion, and burnout, were also identified as significant concerns (n = 10). Additionally, some studies identified technological addiction in students as a challenge (n = 6). With the increasing use of technology in distance education, some students may develop dependence or addiction to their devices. Finally, a few studies (n = 4) underlined the challenges due to privacy violations because distance education can threaten teachers' and students' privacy, particularly if they are required to use their personal devices or share personal information online.

Learning in distance education: Numerous studies (n = 10) marked an absence of assistance from teachers and peers, highlighting the difficulties in delivering tailored support and feedback to students in remote settings. Moreover, some studies (n = 7) reported difficulty obtaining implicit learning, highlighting the hurdles students encounter while acquiring tacit knowledge and abilities through experience and practice, particularly in distant or online learning environments. In addition, a relatively small number of studies (n = 4) reported the difficulties students encounter in learning and digesting new knowledge, particularly in complicated or technical subject areas.

Technology literacy in distance education: Teachers' and students' lack of technology literacy skills were frequently reported (n = 13), with difficulties ranging from basic computer skills to advanced technical knowledge. Limited prior understanding of distance education was also reported in multiple studies (n = 8), indicating that some teachers and students were unfamiliar with the tools, platforms, and pedagogies used in distance education. Additionally, several studies (n = 8) underscored the difficulties of adapting to distance education, highlighting the transition from the traditional face-to-face instruction to online teaching and learning.

Administrative and policy issues: Insufficient class time was reported in multiple studies (n = 5), with concerns about limited time available for instruction and interaction with students. Several studies (n = 4) drew attention to limited educational resources, underlining the issues related to the availability and quality of online educational materials. Moreover, unsuitable courses for distance education were highlighted in multiple studies (n = 4), particularly in subjects that require hands-on experimentation and application. Moreover, three studies highlighted problems with designing online instruction, such as creating engaging and interactive student learning experiences.

Parental involvement and support: Many studies (n = 10) reported challenges with parental engagement, highlighting a lack of necessary attention and involvement from parents, and others noted instances of parents interfering in the class. Parents' lack of knowledge of technology use was also reported in multiple studies (n = 4), indicating that some parents may struggle to navigate the platforms and tools used in distance education. Three studies underlined the challenges of communicating with parents and highlighted difficulties in establishing effective lines of communication between teachers and parents in the online environment.

Classroom management: An inadequate home environment was identified as a challenge in multiple studies (n = 7), including noise, crowded families, and a lack of privacy. The challenges of maintaining discipline were also highlighted (n = 6), with several studies reporting difficulties ensuring student adherence to rules and expectations. Besides, several studies (n = 6) highlighted the increased workload for teachers, with problems ranging from managing multiple online platforms to providing individualized feedback. In addition, a few studies (n = 4) raised the challenge of managing student behaviors, with difficulties ranging from distractions to non-participation and disruptive behaviors. In two studies, distance education was considered time-consuming due to the difficulties encountered, such as additional preparation time and grading.

Suggestions

Regarding the suggestions provided in the reviewed studies, seven themes have emerged as crucial for ensuring quality and effective distance education. Table 6 shows the themes and associated sub-themes, presented and reported in detail below.

Table 6. Suggestions for Distance Education

Theme/Subtheme	Article	n
CONTENT AND CURRICULUM		28
The diversity of online educational materials should be increased.	1, 7, 8, 9, 11, 12, 13, 20, 21	9
The educational content should be adapted to be suitable for distance education.	1, 7, 8, 10, 15	5
The educational goals and objectives should be adapted for distance education.	1, 7, 8, 10, 15	5
The number and hours of classes should be arranged in a way suitable for distance education.	1, 7, 9, 21	4
The quantity and quality of online assessment and evaluation tools should be increased.	1, 14, 15	3
The materials and activities should be adapted to be suitable for distance education.	14, 15	2
TECHNOLOGY AND INFRASTRUCTURE		23
Access problems to the Internet, hardware, and other technological tools should be addressed.	1, 2, 5, 7, 8, 10, 11, 12, 13, 14, 16, 18, 19, 20	14
Infrastructure-related issues should be addressed.	1, 8, 10, 15, 16, 17, 19	7
Real-time technical support services should be provided.	1, 15	2
PROFESSIONAL DEVELOPMENT FOR TEACHERS		17
In-service training on distance education should be provided to teachers.	1, 2, 4, 5, 8, 9, 10, 11, 13, 19, 20, 21	12
In-service training on digital literacy and media literacy should be provided to teachers.	12, 13, 17, 18, 19	5
LEARNING MANAGEMENT SYSTEM		12
The capacity of distance education platforms should be strengthened for stability.	1, 3, 5, 7, 8, 10, 11, 14, 19	9
Distance education platforms should allow for the recording of synchronous classes.	14	1
Distance education platforms should provide asynchronous access options.	14	1
Distance education platforms should provide language support.	19	1

PARENT AND COMMUNITY INVOLVEMENT		10
Collaboration should be established with parents.	1, 6, 7, 13	4
More involvement of parents in the distance education processes should be ensured.	3, 18, 19	3
Collaboration between internal and external stakeholders should be facilitated in distance education.	15, 19	2
The communication between parents, students, and teachers should be strengthened.	15	1
POLICIES AND PRACTICES		11
Equal opportunities should be provided in education.	8, 10, 15, 21	4
A sustainable hybrid education system should be implemented.	18, 19, 21	3
Attendance to classes should be mandatory.	1, 13	2
Turning on the camera should be mandatory.	1	1
Policies suitable for distance education should be developed.	19	1
TRAINING AND GUIDANCE FOR STUDENTS AND PARENTS		11
In-service training on distance education should be provided to parents.	3, 13, 15, 16, 18, 20	6
In-service training on digital literacy and media literacy should be provided to students.	19, 20	2
In-service training on distance education should be provided to students.	19, 20	2
Guidance activities for students should be organized.	14	1

Content and curriculum: The reviewed studies advised enhancing the diversity of easily accessible online educational resources to meet students' diverse learning needs and boost engagement (n = 9). Additionally, the educational content in distance education should be adapted to be suitable for online learning environments (n = 5), and the number and hours of classes should be arranged in a way that is appropriate for online learning (n = 4). Educational goals and objectives should also be modified to suit online learning environments (n = 5). Furthermore, the quality and quantity of online assessment and evaluation tools should be improved to enhance the learning experience in online courses (n = 3). Finally, the materials and activities used in online courses should be adjusted to suit the online learning format (n = 2).

Technology and infrastructure: The reviewed studies have indicated that addressing access problems to the Internet, hardware, and other technological tools is critical in ensuring effective distance education (n = 14). In addition, infrastructure-related issues such as network reliability, system security, and online storage capacity should also be considered (n = 7). To support distance learners in their online courses, real-time technical support services should be provided to address any technical issues and provide assistance when necessary (n = 2).

Professional development of teachers: The reviewed studies have recommended providing in-service training for teachers to improve their skills and competencies in distance education (n = 12). Additionally, studies suggest that in-service training on digital literacy and media literacy should be offered to teachers to help them develop the necessary skills to use technology in teaching effectively (n = 5).

Learning management system: One of the most prominent suggestions is to strengthen the capacity of distance education platforms to ensure their stability and effectiveness (n = 9). Additionally, distance education platforms should allow for the recording of synchronous classes to facilitate student access to course content (n = 1). Moreover, distance education platforms should provide asynchronous access options to enable students to learn at their own pace and convenience (n = 1). Another important suggestion is to provide language support in distance education platforms to cater to the needs of non-native speakers (n = 1).

Parent and community involvement: The reviewed studies suggested that collaboration with parents should be established to meet students' learning needs (n = 4). Parents should be more involved in the distance education processes to support their children's education (n = 3). Furthermore, collaboration between internal and external stakeholders should be facilitated to improve the quality of distance education (n = 2). The communication channels between parents, students, and teachers should be strengthened to ensure effective communication (n = 1).

Policies and practices: The reviewed studies suggested that equal opportunities should be provided to ensure that all students have access to the necessary technology and resources to participate in online classes (n = 4). A sustainable hybrid education system that combines online and face-to-face instruction has also been suggested as a viable option (n = 3). Regarding attendance, some studies recommend making attendance in classes mandatory (n = 2), and others suggest making it mandatory for students to turn on their cameras during online classes (n = 1). Additionally, studies recommend developing policies suitable for distance education (n = 1).

Training and guidance for students: The reviewed studies recommended in-service training for parents on distance education to support students' learning in a remote environment (n = 6). Furthermore, digital literacy and media literacy skills training for students is necessary to promote their effective participation in online courses (n = 2). The studies also recommend offering students in-service training about distance education to facilitate their transition to online learning (n = 2). To assist students in navigating the challenges of remote learning, providing guidance activities is also recommended (n = 1).

DISCUSSIONS AND CONCLUSION

The discussion section covers the advantages and disadvantages of distance education under various subheadings. Initially, the benefits of distance education are discussed, with a focus on its potential to increase accessibility and flexibility in learning. Subsequently, the numerous obstacles that arise during the implementation of distance education are examined, including issues about technology, student engagement, and the need for an effective instructional design. Additionally, suggestions are provided for addressing these obstacles and enhancing the efficacy of distance education.

Benefits

Distance education is very often associated with challenges, but it can also enrich the teaching and learning process with its opportunities. The current review study revealed that distance education could be beneficial and productive in several ways, from encouraging improvement in student learning to providing a flexible and convenient learning environment, enabling the use of digital tools and various resources, boosting student motivation, providing access to recorded content, aiding teachers in time management, permitting content reuse, and engaging parents in learning activities. It should be noted that some of these benefits could be attributed to the features of technologies used to deliver educational content to students. For instance, immersive technologies such as virtual reality and augmented reality positively affect students' academic performance and motivation in distance education ((Turan & Karabey, 2023). Additionally, as demonstrated by Zafeer et al. (2023) and Rafiq et al. (2023), these findings are consistent with the theory that digital tools promote student engagement and learning outcomes.

The benefits reported in this review broadly support the work of other studies focusing on the white side of distance education for teachers and students during the pandemic. This study suggests that students in distance education are more likely to learn independently since they can work at their own pace and access and reuse course materials (Ratten, 2023; Wong, 2023). Moreover, distance education promotes accessibility and inclusiveness by removing geographical barriers and closing educational disparities (Iniesto et al., 2021). It also proves to be a sustainable and cost-effective educational approach by reducing the need for physical infrastructure and travel expenditures (Akindele et al., 2022; Garlinska et al., 2023). In addition, distance education demonstrates its resilience by enabling continuous learning during crises such as pandemics (Bozkurt et al., 2022).

This meta-synthesis analysis builds on and strengthens existing evidence, highlighting the potential for distance education to revolutionize education and guiding educators and policymakers in developing effective online learning environments. By recognizing the benefits of distance education in terms of adaptability, engagement, accessibility, cost-effectiveness and resiliency, stakeholders can make informed decisions regarding its incorporation into K–12 educational settings and the exploitation of its benefits. Continued research in this area is essential to refine best practices and assure the continued success and development of distance education.

Challenges and Suggestions

During and after large-scale natural disasters such as pandemics and earthquakes, all parties involved in massive distance education face numerous obstacles. Despite some studies reporting that teachers successfully carried out and adapted to the distance education process (Alper, 2020), this study identified a significant typology of obstacles faced by K–12 teachers in distance settings and compiled recommendations for mitigating their negative effects.

Our study confirms earlier findings (Elcicek, 2022; Kil & Usun, 2021) that the challenges posed by distance education involve students, teachers, administration, programs, infrastructure, and financing. Not only have the study findings further expanded our understanding of these challenges, but they have also highlighted a unique set of issues specific to the digital nature of the educational process.

The findings highlighted the need for improved access to technology, stable internet connections, and robust technical support to ensure effective distance education for teachers and students (Yeh & Tsai, 2022). With these challenges addressed properly, students from diverse backgrounds and teachers can have a more equitable educational environment (Anthony & Miller, 2022).

Technological literacy and pedagogical training are critical to the success of distance education (Johnson et al., 2023). However, this study showed that teachers and students lack it, hindering their adaptability to distance education technologies. Therefore, teachers (Jimoyiannis & Koukis, 2023), students, and parents should be trained on using technology effectively in distance education.

Keeping students motivated and engaged is essential for success (Yu, 2022), but it becomes a critical challenge in distance settings. A practical method could be to enrich teaching/learning activities with multimedia elements, engaging content, clear communication channels, group projects, online discussions, virtual study groups, ramified activities (Nieto-Escamez & Roldan-Tapia, 2021), virtual and augmented reality applications (Eldokhny & Drwish, 2021), individualized support, and timely feedback. In addition, the parental involvement is also essential in motivating and engaging students in distance education (Alharthi, 2023). Therefore, parents should be involved in students' learning activities and collaborate with teachers to help students improve their learning. Students who are very engaged with distance learning are likely to study more on their own outside the virtual classroom (Gherghel et al., 2023).

Distance education has threatened teachers' and students' social and emotional well-being by interrupting their school lives for long periods. Digital resources can help students communicate and socialize more, overcoming these limitations. Moreover, collaborative initiatives, especially teachers' partnerships with parents (Lanzl, 2023), can increase social connection and collaboration in distance education (Moles et al., 2023).

Along with the scarcity of class time and assessment tools, teachers also faced challenges in maintaining the fairness and validity of assessments (Yoruk, 2021). Teachers can use distance learning-friendly evaluation methods, such as project-based, peer-reviewed self-assessments, along with the available tools adapted to meet distance education needs.

Effective distance education implementation and administration are contingent on timely and appropriate policies. The findings revealed that administrative and policy responses to distance education challenges have been inadequate, leaving teachers with an excessive burden, little support, and limited educational resources that are unsuitable for distance education. Hybrid distance education is suggested as an alternative education method to mitigate the factors disrupting the teaching and learning process in distance education.

Limitation

This study has several limitations that should be considered. The findings may have limited generalizability beyond the Turkish language and cultural context, as the study focused exclusively on Turkish-language research articles. Therefore, caution should be exercised when applying the findings to other linguistic and cultural settings. Second, the study specifically examined K-12 teachers' experiences during or after the COVID-19 pandemic, which restricts the transferability of the findings to other educational levels or crises. Furthermore, the quality assessment of the selected studies involved subjective judgments influenced by the reviewers' perspectives. Although efforts were made to ensure rigor and reliability, variations in individual

evaluations and interpretations are inherent in qualitative research. Lastly, thematic analysis conducted by two researchers may be subject to interpretation and subjective decisions in identifying themes, which could vary with different analytical approaches or researchers.

Given these limitations, it is vital to interpret the findings of this study cautiously. Further research is needed to broaden the scope, consider diverse cultural contexts, including different educational levels, incorporate alternative literature sources, and employ additional analytical approaches to better understand teachers' experiences with distance education.

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