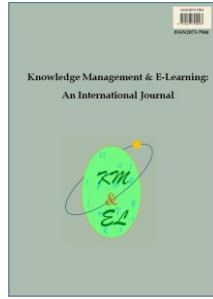

Investigating K-12 teachers' views on online education

Gürbüz Ocak

The University of Afyon Kocatepe, Afyonkarahisar, Turkey

Gülçin Karakuş

Mustafa Kemal Atatürk Vocational and Technical High School, Sivas, Turkey



Knowledge Management & E-Learning: An International Journal (KM&EL)
ISSN 2073-7904

Recommended citation:

Ocak, G., & Karakuş, G. (2022). Investigating K-12 teachers' views on online education. *Knowledge Management & E-Learning*, 14(2), 202–222.
<https://doi.org/10.34105/j.kmel.2022.14.012>

Investigating K-12 teachers' views on online education

Gürbüz Ocak 

Faculty of Education
The University of Afyon Kocatepe, Afyonkarahisar, Turkey
E-mail: gocuk@aku.edu.tr

Gülçin Karakuş* 

Ministry of Education
Mustafa Kemal Atatürk Vocational and Technical High School, Sivas, Turkey
E-mail: karakusgulcin@gmail.com

*Corresponding author

Abstract: This study examines school teachers' views on online education. Online education that removes space and time constraints is becoming increasingly preferred. However, the immediate shift to online education brings some problems for teachers. The study investigated K-12 teachers' views on online education by semi-structured online interviews with 33 school teachers from different geographic regions. Teachers' responses indicated that they faced a variety of problems including technical issues, a lack of parental support, short course duration, student unwillingness to turn on webcams, and teacher inability to reach students (especially those turning off their webcams) in online lessons. The implication of the findings is also discussed.

Keywords: Online education; Teacher views; Interview

Biographical notes: Gürbüz Ocak is a Professor in the Faculty of Education, The University of Afyon Kocatepe. He has been involved in research in the areas of curriculum development, curriculum evaluation, problem solving, online education, digital literacy. He has published papers in *Psycho-Educational Research Reviews*, *Educational Sciences: Theory & Practice*, *International Journal of Academic Research, Education and Science*, *The new Educational Review*. More details can be found at <https://bys.aku.edu.tr/cv.php?cvGonder=5016e0b96e984cf1e3002f365298f38f5a2b6c12>

Gülçin Karakuş has PhD degree in Curriculum and Teaching. Her research interest includes cooperative problem solving, digital literacy, curriculum development and evaluation. She has papers in *Mimbar Sekolah Dasar*, *African Educational Research Journal*, *Shanlax International Journal of Education*, *Themes in e Learning Journals*.

1. Introduction

Online education removes space and time constraints and becomes increasingly prevalent as technology develops. However, online education differs from traditional education

with many innovations and features (Oladele et al.,2022). In a traditional learning environment, the teacher begins teaching, although in online education, that task belongs to the student, and that responsibility creates a pedagogical burden. Students must read the material, participate in discussions, ask questions, set-aside time to study, and follow the courses regularly in a virtual classroom. Compared to regular classes where students interact and share experiences face-to-face, online courses keep them away from their friends and teachers. To benefit from online education, the teacher should encourage the student to participate, communicate, and express opinions (Robles & Braathen, 2002). In online education, teachers need to change their traditional methods, and they need more information about virtual class activities (Robles & Braathen, 2002) or alternative assessment methods (Arend, 2007).

Additionally, teachers need to understand the messages conveyed by students through facial expressions, body language, and gazes and be aware of unspoken communication (James, 2016). Sometimes teachers are reluctant to use online classes because the course structure and online education are incompatible. For example, while online assessment is more accessible in some courses, it is more difficult in some other courses, such as math or drawing (Hillier, 2014). In these courses, teachers may have concerns about time and control. Teachers can avoid some activities depending on whether the activity is detailed and time-consuming. Therefore, they do not favour collaborative activities in online education. However, joint activities will allow all students to participate and create a more democratic environment. The student sees his friends' contributions to work and creates awareness. Teachers can observe how often the student has participated and contributed to the group work, and they can quickly assess the student's contribution (Swan et al., 2006).

The COVID-19 pandemic has affected Turkey like the whole world, and our country has started online education with a suspension of formal education at all educational institutions. After that, three different online education models were applied to the Ministry of National Education. First, EBA TV, whose stream was scheduled for the 12th grade, began broadcasting nationally. Secondly, with the asynchronous education model, the students could use the EBA online portal through the internet. Finally, with the synchronous education model, students had the opportunity to prepare for exams or conduct question-and-answer sessions with teachers with no time limits in the EBA Live classroom. However, authorities should strengthen the infrastructure of online education system in Turkey, such as; system access, security, content, design, implementation, quality, features, and pedagogical regulations (Can, 2020). Therefore, this study aims to reveal teachers' views on online education during the pandemic.

2. Literature review

The most crucial element for online education is technology. The technological facilities must be sufficient for effective online education. Many studies indicate this need (Almazova et al., 2020; Ivaniuk & Ovcharuk, 2020; Khan et al., 2022; Joshi et al., 2020; Lestianawati, 2020; Rahayu & Wirza, 2020; Sintema, 2020; Ünal & Bulunuz, 2020). Some other studies emphasize technical infrastructure rather than technology in online education (Aydin & Erol, 2021; Fauzi & Khusuma, 2020; Ikeda, 2022; Thomas et al., 2022; Zhang et al., 2020). Technological infrastructure encompasses a wide range, such as the internet, networks, connections, digital tools, and applications, depending on economic opportunity. Making financial investments in them depends on the institution. Institutions should support online education by meeting these requirements (Alhumsi &

Alshaye, 2021; Jankowski, 2020; Joshi et al., 2020). Along with these technical facilities, teachers should also have the knowledge and skills to use them. The lack of individual digital competence of teachers hinders the achievement of the desired goal in online education (Almazova et al., 2020; Ikeda, 2022; Ivaniuk & Ovcharuk, 2020; Langford & Damşa, 2020; Rahayu & Wirza, 2020; Shagiakhmetova et al., 2022). Technological change affects teachers and every social environment. For example, the transition to online education experienced worldwide following the COVID-19 pandemic has been challenging for teachers. Depending on new technologies, teachers face problems other than a lack of digital experience (Hjelsvold et al., 2020; Zhang et al., 2020). They felt unprepared for online education (Almazova et al., 2020; Ersin et al., 2020), sometimes they spent a lot of time with connection problems (Sintema, 2020), and they had an information gap about online education (Zhang et al., 2020).

Teachers can traditionally give lessons and assess students by asking questions, quizzes, or paper-pen exams in the regular classroom. In contrast, in online classes, teachers use other methods and applications. Applications like Socrative, Google Forms, COPPA/FERPA, Mentimeter, Poll Everywhere, and Kahoot are helpful teaching and assessment applications. With these applications, teachers can record student responses digitally, compare answers, reduce paperwork, and quickly provide feedback and perform statistical calculations (Dickinson, 1997; Terzis & Economides, 2011; Tüfekçi et al., 2013). Teachers can provide more visuals and save time on classroom activities (Hols-Elders et al., 2008; White & Hammer, 2000; Sarrayrih & Ilyas, 2013). In addition, they can quickly use online forums and homework modules, and in-class activities (Kınalıoğlu & Güven, 2011). However, ignorance of these technology-based methods is a problem for the teacher. Teachers' lack of individual competence leads to difficulties designing lessons (Damşa et al., 2021; Todd, 2020) and evaluating online courses (Joshi et al., 2020; Rahayu & Wirza, 2020). Instructors' lack of individual competency, technical knowledge, negative attitudes toward technology, difficulties in integrating courses with technology, and lack of motivation dampen their engagement in online education and assessment (Joshi et al., 2020).

All these problems result in poor classroom outcomes (Zhou et al., 2020), and teachers feel inadequate, unable to maintain the minimum level of compulsory online education (Shagiakhmetova et al., 2022), or sometimes anxious and overwhelmed (Burstein, 2020; Cipriano et al., 2020) with online education problems. For example, some teachers reported concerns about not covering the curriculum and not providing students with lab experiences during online classes (Bakioğlu & Çevik, 2020). Teachers face problems, and they should keep in mind that teachers' affective traits are also essential to overcome difficulties in online education (Batmang et al., 2021).

Another focus in online education is the student-learning environment. It may be possible for the teacher to ensure that students listen carefully to what is being taught in a classroom. Still, this situation becomes difficult in online education when each student attends online classes in different home settings. External distractions and family disruptions can occur during class (Joshi et al., 2020; Zhang et al., 2020). Even students may not have the technological tools to participate in online education (Ünal & Bulunuz, 2020) or internet access (Lestianawati, 2020), which are the main obstacles for the student.

With the rapid transition to online education, teachers and students have struggled. They needed help with online education at home. Students having problems with online education may be reluctant to take online courses. They may have interest and commitment issues. Their parents should support the students' learning environment. If

the student does not receive the psychological support, they expect in the learning environment, problems can arise. Depending on these problems, poor cooperation between parents, students, and teachers hinders online education (Aydin & Erol, 2021; Avsar Erumit et al., 2021; Fauzi & Khusuma, 2020; Lestianawati, 2020; Rahayu & Wirza, 2020).

Finally, the teaching process comes to the fore in online education. For example, the course hours in online education are shorter than the regular course hours. This limitation creates the problem of time constraints in the teaching process (Langford & Damşa, 2020). Teachers need more time for both online education activities preparation and online education process (Fauzi & Khusuma, 2020; Todd, 2020). They need to know how to design engaging material and explain it during online education (Lestianawati, 2020; Rahayu & Wirza, 2020). For example, gaining scientific experience in online education requires many different procedures than traditional teaching (Ünal & Bulunuz, 2020). During face-to-face classes, teachers and students interact; communicate continuously. However, this interaction is limited to computer screens and speakers in online education. There is a lack of teacher-student interaction, leading to teachers ignoring instructions (Ivaniuk & Ovcharuk, 2020; Zhou, et al., 2020), not providing feedback (Ersin et al., 2020; Rahayu & Wirza, 2020) all of which hinder online education. Teachers unfamiliar with online education can also turn to traditional methods in the virtual environment (Kınalıoğlu & Güven, 2011). Some teachers copy face-to-face content into online courses (Zhou et al., 2020), but online education is structured differently. Teachers need pedagogical knowledge (in online education) (Damşa et al., 2021). They need to be aware of the teaching process (Angelo, 1995; Çelen et al., 2011) and safety precautions in online education (Joshi et al., 2020). Thus, problems arising from uncertainty do not occur. As Fluck et al. (2009) claim, positive experiences positively affect students in the future. Otherwise, while online education is widely expected to be much more effective because it is technology-based, these issues can make it inferior to regular classes.

Previous literature shows positive aspects of online educational practices (Arend, 2007; Baldwin & Trespalacios, 2017; Finch & Jacobs, 2012), how to increase success in online education (Ronsisvalle & Watkins, 2005; Volery & Lord, 2000). In addition, some studies present theoretical views (Anderson, 2008; Larreamendy-Joerns & Leinhardt, 2006) on the impact of online education (Crawford-Ferre & Wiest, 2012; Kuo et al., 2013); others focus on the need to examine teachers' views on online education (Galante, 2002; Mason, 1998). However, as mentioned above, a review of the recent literature shows that teachers face various problems related to online education in four essential areas: individual competence during online education, technical structure, student learning environment, and teaching process in online education. Therefore, this study focuses on teachers' views on these four areas. With this in mind, it is essential to identify K12 teachers' views on online education. It is expected that this will promote a more beneficial online educational environment and provide educators to improve teaching in the online environment.

3. Method

This study was conducted in the interview model. Qualitative data collection techniques have been used to provide detailed and descriptive explanations for this purpose (Yıldırım & Şimek, 2006).

3.1. Participants

The study group consists of 33 teachers teaching in Central Anatolia Region, Aegean Region, Black Sea Region, and Eastern Anatolia Region of Turkey in the 2020-2021 academic year. The ages of the teachers ranged from 27 to 55. The reason for including teachers of different ages was to find out the views of both young and old teachers on online education. 13 (40.6%) participants were male, and 19 participants (59.4%) were female. Although the number of participants was set at 35 before the study, two participants indicated they did not wish to participate. Moreover, the authors aimed to identify field-based perspectives by analysing teachers from various fields.

Criterion sampling, one of the purposive sampling methods, was used in determining the participants. The criterion sampling method aims to identify participants with a set of predetermined criteria that allow researchers to examine the purpose of the research with concrete indicators. For example, researchers can set standards for participants in a study, or some requirements can be used based on literature (Yıldırım & Şimek, 2006). The criterion for determining the participants was giving online courses for at least four weeks. It is believed that four weeks is enough to get used to online education, and they have some views in this regard. Descriptive characteristics of the participants are presented in Table 1.

Table 1
Descriptive characteristics of participants

Characteristics	Male	Female	Total
Gender	13 (40,6%)	19 (59,4%)	33
Field	Number	Frequency	Educational Level
Machine Technology	3	9%	High School
Mathematics	4	12%	Secondary S(1), High S(3)
Religious Cult. Moral Know.	3	9%	Primary School
Turkish	3	9%	Secondary S(2), High S(1)
Science	2	6%	High School
Primary School	4	12%	Primary School
History	3	9%	High School
Justice	2	6%	High School
English	3	9%	Secondary S(2), High S(1)
Biology	3	9%	High School
Music	3	9%	Secondary School
Professional Seniority	Number	Frequency	
0-5 Years	5	15%	
6-10 Years	12	36%	
11-15 Years	8	24%	
16 Years and more	8	24%	

3.2. Data collection

The semi-structured interview form was used as a data collection tool to identify teachers' views on online education. The interview technique was preferred due to its flexibility, removing limitations on tests and questionnaires and helping to gain more in-depth information on research questions. The interview form was created following the research questions, consisting of six open-ended questions developed by researchers; easy understanding of the questions and not being multidimensional, not directing participants were criteria used in preparing the questions (Kallio et al., 2016).

Questions were submitted for expert opinion to check the comprehensibility, applicability, and relevance of the questions in terms of content. After collecting two expert opinions, one question was removed, and two questions were changed to clarify the meaning. Suggestions for correction were made, and the validity of the questions was determined. Sample interview form questions are shown as follows. How do you perceive your individual competence during online education? What personal qualities or skills are more important for a teacher when teaching online? What do you think about technical difficulties? Do you have trouble in online classes? Could you solve these problems without professional help? How do you perceive students' learning environment at home? Given that interview questions would provide data, data collection was started.

The interviews were conducted online and each interview with a teacher lasted around 10-15 minutes. The second researcher took detailed notes. Interviews were conducted to confirm participants' views. The collected data were subjected to content analysis. Content analysis involves an in-depth study that makes it possible to uncover ambiguous topics and codes. This type of analysis aims to present the reader with the results in an organized and interpreted form. This study attempted to collect teachers' views of online education. Data analysis involved (1) coding the data, (2) finding themes, (3) organizing codes and themes, and (4) defining and interpreting the findings.

3.3. Data analysis

First, data was extracted before proceeding with content analysis. Raw data has been examined in detail, and unnecessary expressions have been removed. Later, the remaining statements were encoded in a general framework at the sentence level. Encoding is the expression of data in short, simple, and straightforward symbols for ease of processing (Karasar, 1998). Each new set is created by comparing it to an existing code set or adding a new code set. An accumulated code list is maintained and updated as new codes are created and developed. Similarities and differences in the resulting codes were determined (Creswell, 2003). After creating codes and searching for themes, the researchers systematized the collected data. All research results are reproduced directly without comment. In addition, the researchers performed separate coding of the data obtained from interviews, and the coding was compared. They attempted to reach a consensus on controversial codes and issues. In addition, the accepted structure was presented to two field experts.

Experts were asked to give their opinion on the suitability of the created structure. According to the views received, codes and issues were discussed, consensus reached, and corrections made. The agreement of both researchers was determined using the formula proposed by Miles and Huberman (1994). Inter-rater reliability was 81%. Therefore, at least 80% agreement is expected (Miles & Huberman, 1994). In addition, an attempt was made to increase external reliability by storing raw data from the research to be requested by other researchers or for comparison in another study in the future. In

addition, some sentences summarizing the main idea in statements made by participants have been placed in quotation marks as is. In the data analysis, teachers were represented by P1, P2 (P symbolizes participant teachers).

4. Results

Teachers' views on their Individual Competence during online education are presented in Table 2.

Table 2

Teachers' views on their individual competence during online education

Theme	Category	Code	Participants	Freq.
Individual Competence	Technological Knowledge	Being unable to follow a rapid change in technology	P4, P7, P10, P11, P18, P28, P32	21%
		Not being able to keep up with a quick change in technology		
		Insufficient expertise in online education	P6, P14, P26, P29	12%
	Lack of Skill	Lack of social communication skills in online education	P5, P11, P18, P23, P27, P33	18%
		Creating resources suitable for online education	P3, P9, P14, P16, P29	15%
		Transformation of resources suitable for online education	P3, P7, P13, P20	12%
	Not being able to teach online for a long time	P1, P5	6%	

A sample view of “Not being able to follow a rapid change in technology” is given:

“The rapid change in technology and the fact that there is a further development every day are significant for education. However, this situation caused me to leave for another world suddenly because I wasn't in touch with technology much. Especially with the pandemic, it has been difficult for us (transition to online education) and teach our classes on Zoom. I've never used zoom. I had a hard time at first. But, thanks to my young teacher friends, they were helpful. Then I got used to it more, but the transition was disturbing (P28).”

A sample view of “Insufficient expertise of online education” is given:

“As a teacher, I think we are walking a tough road in terms of skills in online education. Being an effective teacher in the classroom does not guarantee that I

will achieve the same success in teaching online. This is because online education has a different dynamic (P 29)."

A sample view of "Lack of social communication skills in online education" is given:

"In online education there is no problem giving lessons, asking questions, and solving sample questions. Although there were some problems in the early days, the system was adjusted after some trials and some applications. Still, the most difficult thing was the communication problem between the student and us. Most of the time, I thought I couldn't reach my student (P 33)."

A sample view from "Transformation of resources suitable for online education" is given:

"As a math teacher, there may be a shortage of resources from time to time during preparation, and if there is a resource, we may have difficulty transferring it to digital media. For example, a digital pen is needed to solve math problems in online classes, and a graphics tablet is a must for this (P13)."

A sample view of "Creating resources suitable for online education" is given:

"It's difficult to find a presentation, course activity, or content that works for every subject. I use PDF versions of textbooks. There is a great need for support in preparing digital content and activities. Nor can I create resources for online exams (P16)."

Teachers' views on the Technical Structure of online education are presented in Table 3.

Table 3
Teachers' views on technical structure of online education

Theme	Category	Code	Participants	Freq.
Technical Structure	Support	Problems with accessing the internet	P1, P6, P10, P12, P19, P26, P29, P32	24%
		Inadequate support from parents to solve technological problems	P3, P7, P11, P17, P22, P30	18%
		Inadequate support from school administration	P5, P9, P28, P31	12%
	Features of Applications	Time limit	P7, P10, P11, P18, P22, P26, P30, P31	24%
		Structural features of online education applications	P9, P12, P28, P29	12%
		Difficulty in understanding applications in a foreign language	P11, P28, P30	9%

A sample view from “Problems with accessing the internet” is given:

“In online education, an entire country teaching via Zoom suddenly caused the system to become overloaded. We had connection problems most of the time, and the internet disconnection during class caused motivation problems for both the students and myself (P12).”

A sample view of “Inadequate support from parents to solve technological problems” is given:

“Some parents didn't care. When I tried to call and speak, I realized that they were not taking this situation seriously. For example, instead of attending online classes, I had many students take care of their siblings or do housework under the guidance of their parents. I think parents avoid doing even the simplest things they can do technologically (P7).”

A sample view of “Time limit” is given:

“That the lesson time in online classes is 30 minutes is a factor that negatively affects education. The time given was insufficient for student attendance, solving connectivity issues, and instruction. For example, in English lessons, it was sometimes necessary for the students to listen to an audio text 3-4 times (P 22).”

Teachers' views on Students' learning environment are presented in Table 4.

Table 4
Teachers' views about students' learning environment

Theme	Category	Code	Participants	Freq.
Students' Learning Environment	Social Conditions	Lack of parental support to motivate students to improve education	P4, P7, P10, P12, P13, P16, P18, P21, P25, P27, P28	33%
		Parental intervention	P7, P15, P22, P26, P28	15%
		Noises in students' homes	P4, P17, P25	9%
		Parents do not control those students attend online classes	P19, P24	6%
		Socio-economic conditions of the parents	P21, P23	6%
		The burden of family conflicts (increased by quarantine)	P6, P19	6%
	Physical Conditions	Inappropriate physical conditions at home	P2, P3, P7, P16, P20, P21	18%
		Lack of technical equipment	P9, P20, P22, P27	12%
		Lack of space for students	P19, P31	6%

A sample view from “Lack of parental support to motivate students to improve education” is given:

“Parental support is crucial for students' learning and success in education. However, family involvement in online education took on a completely new meaning as school closures forced many students to continue their education from home. As a result, parents have to take much more responsibility for the education and learning of their students in online classes (P10).”

A sample view from “Inappropriate physical conditions at home” is given:

“It is almost impossible for students to experience the school environment at home. Especially my students with many siblings have limited opportunities. They take turns attending classes with their siblings. Due to the lack of internet and computers, the students could not attend the online classes properly. While some go to neighbours to take classes, others may not have the opportunity (P3).”

A sample view from “Lack of technical equipment” is given:

“All students should have equal opportunities. Unfortunately, some students do not have internet and computers. In addition, students must take up online classes seriously and follow them regularly (P20).”

Teachers' views on the instructional process in online education are presented in Table 5.

A sample view from “Absenteeism” is given:

“The number of students participating in online education is deficient. Apart from those who do not attend classes because of impossibility, many students do not attend classes because absenteeism does not prevent them from passing classes. Moreover, the number of students participating in online classes only during exams is increasing (P26).”

A sample view of “Student unwillingness” is given:

“During the online education, less participation, unwillingness, students not wanting to be involved in class, and activities that were not effective as in face-to-face classes compelled me as a teacher. The biggest obstacle is the lack of motivation and unwillingness to engage in online education (P 28).”

A sample view from “Difficulty assessing students” is given:

“I did not make an accurate and fair assessment. Because I could not distinguish between students who, due to financial impossibility, could not provide the necessary equipment and therefore did not attend classes at all and those who did not arbitrarily attend classes (P11).”

A sample view from “Lack of face-to-face communication” is given:

“In Turkish class, we benefit most from book reading activities. For example, we read a book for the last 10 minutes of class, but I have to give reading homework in online class, and I don't know if he reads at home. He doesn't tell me this book by looking at me. I think a bond that cannot be made with face-to-face communication will not be filled in online education (P31).”

A sample view from “Cameras turned off” is given:

“When students' cameras are turned off in online classes, it negatively impacts the process. This decision, made in order not to infringe on students' privacy, also affects student participation. I cannot see my student's face. I cannot look him in

the eye, and I do not know if he understands. While the physics class is difficult to understand even in face-to-face classes, in my opinion, it is not understood at all in online classes. In addition, having cameras turned off prevents me from getting feedback (P5).”

Table 5
Teachers' views on instructional process in online education

Theme	Category	Code	Participants	Freq.
Instructional Process	Students' Affective Features	Absenteeism	P1, P4, P9, P10, P16, P18, P21, P26,	24%
		Students' unwillingness	P6, P17, P19, P28, P30	15%
		Students are hesitant about online education	P4, P18, P24, P30	12%
		No obligation to attend an online course	P11, P15, P24,	9%
		Students get bored easily	P1, P14, P3	9%
		Answer without permission	P7, P13, P1	9%
		Students are becoming antisocial (due to the pandemic)	P12, P17, P20	9%
		Students lack goals due to uncertainty	P14, P31, P21	6%
		Effect of the previous year on students	P9, P14	9%
		Difficulty assessing students	P8, P13, P11, P6, P22, P28	21%
	Uncertainty	Difficulty determining whether the student is listening or not	P10, P7, P28, P26	12%
		Being unsure about whether or not students understand	P18, P9, P22, P31	12%
		Inability to keep students focused on the course	P8, P27, P26, P30	12%
		Being unable to ensure active participation of student	P19, P7, P29	9%
		Not being able to provide permanent learning	P6, P33	6%
		Difficulty getting students' attention	P5, P32	6%
		Online Course Structure	Lack of face-to-face communication	P1, P2, P8, P13, P15, P17, P18, P21, P24, P31
	Cameras turned off		P2, P5, P7, P10, P16, P19, P22, P26, P29	27%
	Difficulty making lessons enjoyable		P4, P8, P21	9%
	Having difficulty using Ice breakers		P3, P6, P25	9%
Teaching applied education online	P1, P9, P24		9%	

A sample view is given from “Teaching applied education online” is given:

“Since our teaching is hands-on, online education is not suitable for us. We only teach with videos and theoretical information. However, to develop qualified human resources in vocational education, it is necessary to train people who can absorb and interpret information and evaluate and apply their knowledge. It is not possible to say that this is fully achieved with online education (P9).”

5. Discussion

This study examined teachers' views on online education. In Individual Competence theme, teachers believe they cannot keep up with rapid technological change and have insufficient expertise in online education. They also need to improve their social communication skills in online education and learn to create resources suitable for online education. Not adapting to a rapid technological change can depend on a sudden transition to online education due to pandemic and unexpected problems that teachers face in this immediate transition. Lam (2000) finds that too much pressure on teachers to use technology in education makes them feel technophobic and avoid using technology. This is not some resistance or fear, and it is because administrators have high expectations for a rapid and easy transition. In this study, mathematics teachers indicated that technical aids such as tablets, mice, and computers should be used effectively in mathematics lessons in online classes. Perienen (2020) comes to a similar conclusion and notes that mathematics teachers have expressed their pedagogical need for training in ICT use.

Teachers feel that their professional online education skills are inadequate and have problems preparing e-learning resources for online education. One reason may be the inadequacy of the direct teaching method used in traditional education. Since online education requires more technology-based methods and technological knowledge, teachers' lack of knowledge about technology, the theoretical infrastructure of online education, or the use of information communication technologies negatively affects online education (Kınalıoğlu & Güven, 2011). Mouza (2009) states that the professional training of teachers improves their skills in using technology in the classroom and enables them to develop designs and applications that support online education. However, Balanskat et al. (2006) and Perienen (2020) note that although teachers are proficient in using technology, many problems can also arise during online education, which means that the increase in technological knowledge may not be the only solution. However, apart from other difficulties, what helps online education first is fun activities suitable for a classroom and attract more students' attention instead of a direct teaching method (Alper, 2020).

Another issue related to the success of online education is social distance. Social distancing and online education also influenced student socialization (Ali, 2020; Alper, 2020; Robles & Braathen, 2002). A similar pattern of results was obtained in a study conducted by Adnan and Anwar (2020). The lack of face-to-face interaction between teacher and student, limited course duration, and lack of socialization is crucial in online education. To solve this problem, teachers should first be patient and make them feel that they value their students; they can teach in smaller, maybe modular forms. Although it is difficult, they should constantly try to interact with the students, attract the students' attention, and focus on the lesson according to the educational characteristics of the age.

Teachers also struggle to convert traditional resources into online education. Closing schools and moving to online education during a pandemic requires educating staff about the issue and providing the necessary resources for online education (CoSN, 2020). Before the pandemic, online resources were used. However, these resources were used to support traditional education, so teachers did not need as many online resources as they do today. However, now education continues mainly online. Additional online resources used before the pandemic and online resources used recently do not have the same functionality. Even the teachers can find easy ways, as they constantly need to research, improve and take innovative initiatives. For example, many explanations and tips offered in social media groups also assist teachers in solving resource and technical problems (White & Hammer, 2000).

Second, in Technical Structure theme, teachers face problems with access to the internet, insufficient parental support for technological issues at home, time constraints, and structural features of online educational applications that are sometimes difficult to use. The concern about internet access in online education is expressed in many studies (Alotaibi, 2015; Alvarez et al., 2016; Hussar et al., 2020; Kassab et al., 2020). A lack of infrastructure or technical connection problems can cause problems with internet access. The results directly agree with previous results; this may result from the rapid transition to online education. The whole country's Internet infrastructure may not suit conducting such large-scale online education. However, when the right conditions are in place, the Internet can be a powerful tool in education. This tool supports effective educational programs and allows students to benefit from online education at the highest level. Internet and traditional classroom teaching methods are not mutually exclusive but should be seen as an additional dimension that can facilitate a teacher's role in education. In this regard, necessary measures should be taken to solve technical and infrastructural problems for effective online education (Volery & Lord, 2000). Steps to be against internet access and technological deficiencies in online education will allow teachers to manage the process with the least amount of trouble in another potential pandemic (Basilaia & Kvavadze, 2020; Perienen, 2020).

Unfortunately, parental support in solving technical problems is insufficient. More often than not, teachers try to communicate with parents and talk to them about student learning. Assertive communication is the basis for this partnership and creating a sense of community between home and school. Despite some challenges in these changing times, teachers need to continue developing and broadening their skills to maximize effective communication with parents. Internet technology is the best tool used by schools to communicate with parents. For example, school websites are increasingly being used to convey a wide range of school information (Graham-Clay, 2005). Parents can receive information about meetings or student success. When parents attend meetings, it can make a big difference to students. However, the lack of technological knowledge also limits many parents' communication ability. Teachers should never assume that all students would have access to technology at home (Lai & Widmar, 2021; Masonbrink & Hurley, 2020; Putra et al., 2020; Ramirez, 2002; Walters, 2020). This purposeful connection between teachers and parents cannot be established if parents do not support students due to insufficient technological knowledge. Parents can provide educational programs to increase their technical knowledge to overcome these problems (Xie et al., 2021). This is consistent with a study by Lee and Bowen (2006) indicating that parents benefit from technology education programs. Parents with better technology skills can support students and communicate more easily with the teacher.

Teachers have time restrictions during online classes. In Turkey, the traditional lesson in face-to-face education is 40 minutes, while online lessons are 30 minutes. This

limitation causes teachers to be afraid to finish courses and activities. Teachers' unpreparedness for these issues can lead to more significant difficulties in time management, and allowing teachers short instruction times in virtual classrooms can make this even more challenging (Ali, 2020; Arslan & Şumuer, 2020). Therefore, there is a need to review and revise the curriculum content applied in face-to-face and online classes. The authorities must make the necessary corrections and restrict the course activities suitable for online education.

Structural features of online educational applications can sometimes be complex for teachers to understand. Digital technologies can improve learning by accessing information, improving communication, and providing self-directed and collaborative learning opportunities. Therefore, teachers have been expected to integrate digital technologies in the past decade. However, no single technological solution can be applied to every class, lesson, or teaching method. Integrating technology into the classroom is complex and varied for many teachers (Hyndman, 2018). Applications for teachers can be simplified, or some teachers can receive training on how to use these applications to make it easier for teachers. Using digital technologies helps teachers teach more effectively, and students communicate more easily. It also allows the teacher to obtain more detailed information about student learning (Wise et al., 2011).

Third in the Students Learning Environment theme, teachers believe that parents need to support students' motivation to improve education and should not interfere with online courses. Students at home have inadequate physical conditions and need technical equipment. Parental support, as mentioned earlier, is vital to student learning. During the pandemic, a large majority of both teachers and parents said most students were studying less and no longer wanted to go to school these days. Many parents supervised their children's study and homework instead of teachers to enhance students' autonomous learning. The relationship between parents and teachers was closer during online education, and parent support became more integrated with many schools (Zhou et al., 2020). Parental support is required for students to benefit from online education fully. As long as they provide this support, parents will also enjoy online education. Parents who report more positive experiences with online education also support online education (Henderson et al., 2021). In addition, parents with students in the same class support each other in online education, helping each other, communicating and realizing similar problems, and providing social support to solve these problems (Dworkin et al., 2013). Despite all the difficulties, as long as parental support in online education is provided, the effectiveness of the education provided will increase. The bond between home and school grows more substantial. Students' self-planning, independent learning, and self-management skills should be developed in cooperation with the home school (Yao, Jin, & Liu, 2020). Online education aims to provide self-learning skills as part of a pedagogical approach. Therefore, online courses should be designed and implemented to support learner autonomy (Henderson, 2021; James, 2016), and parents can make a big difference for students.

Considering that the student conducts all educational activities at home during online classes, the importance of physical conditions and the lack of materials are indisputable facts. However, there has been much debate as to whether or not the home is a desirable learning environment. Undoubtedly, students and teachers face problems when learning and teaching at home. First, there is a variety of distractions at home. For example, housework and childcare can negatively affect students' online learning. Second, not all teachers and students find suitable places at home. Third, inadequate hardware and home network connectivity can limit education and training (Zhang et al., 2020).

Finally, in the instructional process theme, absenteeism and unwillingness of teachers and students and the reluctance of teachers and students are important results. Student psychology, lack of willingness, low motivation, and the abandonment of online courses prevent online education. While students' stress levels in online classes increased, their self-regulation skills and motivation decreased. The reason for this situation may be an increase in health concerns. Students whose academic motivation waned during the pandemic found it sufficient that their grades did not deteriorate, rather than being more successful (Urđan & Kaplan, 2020). Another reason for this situation can be that they believe that they cannot learn through online education. They lack the confidence to improve online education, and distinct characteristics over classroom instruction. Another reason students experience such negativity may be that they are psychologically unready to move to online education. For example, Berge and Muilenberg (2005) find that technical problems are less effective than other personal problems encountered in online classes. Students can rely on traditional teaching methods. A new and radical change may have led to a pedagogically difficult situation to accept. A leaving from what has long existed may be unacceptable to students (Aboagye et al., 2021). As a result, Mouza (2009) finds that students' attitudes towards the lesson influence the teacher's classroom activities. Teachers also find it difficult to teach an unmotivated and unwilling student. This may be because students are concerned about financial issues they may encounter in the future, depending on the COVID-19 pandemic. Many parents may consider academic concerns less critical when considering financial difficulties (Ramij & Sultana, 2020; Waiker et al., 2021).

Another issue raised by participants is assessment. Teachers also struggle to assess students in online classes. They are unsure if a student is listening or not. This may be because the online assessment differs from the traditional assessment. Online assessment requires accurate and comprehensive assessment criteria by which students can be assessed and appropriate tools for those criteria are needed (Robles & Braathen, 2002). However, teachers may find online assessment difficult as they have never conducted online assessment and are unaware of alternative assessment methods used in online education (Joshi et al., 2020; Rahayu & Wirza, 2020). In addition, if they know about online assessment, there is another problem: technical infrastructure in the online assessment. Many studies point to infrastructure problems in online education (Aydin & Erol, 2021; Fauzi & Khusuma, 2020; Ikeda, 2022; Kınalıođlu & Güven, 2011; Thomas et al. 2022; Zhang et al., 2020). Infrastructural issues need to be addressed for online assessment to be practical. Many students taking online exams simultaneously can pose a problem for an inadequate institutional system.

Another conclusion of this study is that students' webcams are turned off, and teachers do not see them. Students mostly do not turn on their webcams in online classes. This is a decision to respect privacy (Castelli & Sarvary, 2020; Hosszu et al., 2021). If students do not turn on their webcams, teachers will not be able to see students. Assessment problems in online education and webcam problems are related. When the teacher asks a question to assess the student, they also want to see their face and look into their eyes. With webcams turned off, the teacher worries about what students are doing during class. When the teacher sees the students, it can be understood from the facial expressions whether the student understands or not. Then the teacher can give feedback to the student. Feedback must be provided by the teacher (Ersin et al., 2020; Rahayu & Wirza, 2020). It is necessary to identify incomplete or incorrect learning by the teacher. Therefore, the teacher should see the students.

6. Limitations

This study is limited in several aspects outlined in this section. Specifically, the sample selected for this study included teachers who taught online for at least four weeks. Therefore, the results obtained in this study may not be applied to teachers who have been teaching online courses for a long time. Another limitation is data collection. Although it was considered appropriate to conduct a qualitative study, this may limit detailed data collection. More detailed longitudinal studies, incorporating quantitative and qualitative techniques, can help generate multidimensional data on teachers' views of online education. Another limitation of the study is that this study was only conducted in one country, Turkey. An international study aims to show regional and cultural differences more clearly.

7. Conclusion

This study examined teachers' views on online education. As a result, it was concluded overall that teachers faced technical issues, lack of parental support, short course duration, students' unwillingness, and teachers' inability to reach students (depending on webcams turned off) in online lessons. Teachers should design learning experiences during online education, guide learning, cooperate with new knowledge production, and build a learning ecosystem (Li & Tian, 2021). They need to communicate, give feedback to students, and be leaders and companions of online education (Yao et al., 2020). These findings complement research on raising awareness of institutional support. Institutions must provide the necessary equipment and support, but providing resources for online education is not enough. Educators, administrators, and policymakers should support online education in pedagogical, technological, institutional, and affective domains (Ghanbari & Nowroozi, 2022). Parents can transform online education into a more exciting structure for students. Therefore, students can have autonomous learning skills in online education.

Author Statement

The authors declare that there is no conflict of interest.

ORCID

Gürbüz Ocak  <https://orcid.org/0000-0001-8568-0364>

Gülçin Karakuş  <https://orcid.org/0000-0002-0587-4079>

References

- Aboagye, E., Yawson, J. A., & Appiah, K. N. (2021). COVID-19 and e-learning: The challenges of students in tertiary institutions. *Social Education Research*, 2(1), 1–8.
- Adnan, M., & Anwar, K. (2020). Online learning amid the COVID-19 Pandemic: Students' perspectives. *Journal of Pedagogical Sociology and Psychology*, 2(1), 45–51.
- Alhumsi, M. H., & Alshaye, R. A. (2021). Applying technology acceptance model to Gauce University students' perceptions of using blackboard in learning academic

- writing. *Knowledge Management & E-Learning*, 13(3), 316–333.
- Ali, W. (2020). Online and remote learning in higher education institutes: A necessity in light of COVID-19 pandemic. *Higher Education Studies*, 10(3), 16–25.
- Almazova, N., Krylova, E., Rubtsova, A., & Odinkaya, M. (2020). Challenges and opportunities for Russian higher education amid COVID-19: Teachers' perspective. *Education Sciences*, 10(12): 368.
- Alotaibi, S. J. (2015). Attendance system based on the internet of things for supporting blended learning. In *Proceedings of the 2015 World Congress on Internet Security (WorldCIS)* (pp. 78–78). IEEE.
- Alper, A. (2020). Pandemi sürecinde k-12 düzeyinde uzaktan eğitim: Durum çalışması. *Milli Eğitim Dergisi*, 49(1), 45–67.
- Alvarez, I. B., Silva, N. S. A., & Correia, L. S. (2016). Cyber education: Towards a pedagogical and heuristic learning. *ACM SIGCAS Computers and Society*, 45(3), 185–192
- Anderson, T. (Ed.). (2008). *The theory and practice of online learning*. Athabasca University Press.
- Angelo, T. A. (1995). Classroom assessment for critical thinking. *Teaching of Psychology*, 22(1), 6–7.
- Arend, B. D. (2007). Course assessment practices and student learning strategies in online courses. *Journal of Asynchronous Learning Networks*, 11(4), 3–17.
- Arslan, Y., & Şumuer, E. (2020). Covid-19 döneminde sanal sınıflarda öğretmenlerin karşılaştıkları sınıf yönetimi sorunları. *Milli Eğitim Dergisi*, 49(1), 201–230. doi: 10.37669/milliegitim.791453
- Avsar Erumit, B., Tanis Ozcelik, A., Yuksel, T., & Tekbiyik, A. (2021). Examining the views of preservice teachers about online science education during the COVID-19 lockdown: Expectations, opportunities, threats, motivations, and beliefs. *Journal of Turkish Science Education*, 18, 2–26.
- Aydin, E., & Erol, S. (2021). The views of Turkish language teachers on distance education and digital literacy during covid-19 pandemic. *International Journal of Education and Literacy Studies*, 9(1), 60–71.
- Bakioğlu, B., & Çevik, M. (2020). Views of science teachers on distance education during the COVID-19 pandemic. *Turkish Studies*, 15(4), 109–129.
- Balanskat, A., Blamire, R., & Kefala, S. (2006). *The ICT impact report. A review of studies of ICT impact on schools in Europe*. European Schoolnet.
- Baldwin, S. J., & Trespalacios, J. (2017). Evaluation instruments and good practices in online education. *Online Learning*, 21(2). doi: 10.24059/olj.v21i2.913
- Basilaia, G., & Kvavadze, D. (2020). Transition to online education in schools during a SARS-CoV-2 coronavirus (COVID-19) pandemic in Georgia. *Pedagogical Research*, 5(4): em0060.
- Batmang, B., Sultan, M., Azis, A., & Gunawan, F. (2021). Perceptions of pre-service teachers on online learning during the COVID-19 pandemic. *International Journal of Education in Mathematics, Science, and Technology (IJEMST)*, 9(3), 449–461.
- Berge, Z., & Muilenberg, L. (2005). Survey of student barriers to e-learning. *Distance Education Journal*, 26(1), 29–48.
- Burstein, R. (2020). *Research eclipsed: How educators are reinventing research-informed practice during the pandemic*. Retrieved from https://d3btwko586hcvj.cloudfront.net/uploads/pdf/file/212/Research_Eclipsed_FINAL-1600884157.pdf
- Can, E. (2020). Coronavirüs (Covid-19) pandemisi ve pedagojik yansımaları: Türkiye’de açık ve uzaktan eğitim uygulamaları. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi*, 6(2), 11–53.
- Castelli, F. R., & Sarvary, M. A. (2020). Why students do not turn on their video cameras

- during online classes and an equitable and inclusive plan to encourage them to do so. *Ecology and Evolution*, 11(8), 3565–3576. doi: 10.1002/ece3.7123
- Çelen, F. K., Çelik, A., & Seferoglu, S. S. (2011). Yükseköğretimde çevrim-içi öğrenme: Sistemde yaşanan sorunlar ve çözüm önerileri. *Journal of European Education*, 1(1), 25–34.
- Cipriano, C., Baumsteiger, R., Brackett, M., Mannweiler, M., Seibyl, J., Tan, V., Torv, L., & Zieher, A. (2020). *Supporting connecticut educators with SEL during times of uncertainty and stress: Findings from Fall 2020*. Yale Center for Emotional Intelligence, USA.
- Crawford-Ferre, H. G., & Wiest, L. R. (2012). Effective online instruction in higher education. *Quarterly Review of Distance Education*, 13(1), 11–14.
- Creswell, J. W. (2003). A framework for design. In *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (pp. 9–11). Sage.
- CoSN. (2020). *COVID-19 Response: Preparing to take school online*. Retrieved from https://dpi.wi.gov/sites/default/files/imce/broadband/COVID-19_Member_CoSN.pdf
- Damşa, C., Langford, M., Uehara, D., & Scherer, R. (2021). Teachers' agency and online education in times of crisis. *Computers in Human Behavior*, 121: 106793.
- Dickinson, K. (1997). Distance learning on the internet: Testing students using web forms and the computer gateway interface. *Tech Trends*, 42(2), 43–46.
- Dworkin, J., Connell, J., & Doty, J. (2013). A literature review of parents' online behavior. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 7(2): 2.
- Ersin, P., Atay, D., & Mede, E. (2020). Boosting preservice teachers' competence and online teaching readiness through e-practicum during the COVID-19 outbreak. *International Journal of TESOL Studies*, 2(2), 112–124.
- Fauzi, I., & Khusuma, I. H. S. (2020). Teachers' elementary school in online learning of COVID-19 pandemic conditions. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 5(1), 58–70.
- Finch, D., & Jacobs, K. (2012, September). Online education: Best practices to promote learning. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 56(1), 546–550.
- Fluck, A., Pullen, D., & Harper, C. (2009). Case study of a computer based examination system. *Australasian Journal of Educational Technology*, 25(4), 509–523.
- Galante, D. J. (2002). *Web-based mathematics: An examination of assessment strategies implemented in the online mathematics classroom* (pp. 1–189). Doctoral dissertation, Illinois State University, USA.
- Ghanbari, N., & Nowroozi, S. (2022). Iranian EFL teachers' challenges and coping strategies during COVID-19 pandemic: A case study. *The Qualitative Report*, 27(3), 605–625.
- Graham-Clay, S. (2005). Communicating with parents: Strategies for teachers. *School Community Journal*, 15(1), 117–129.
- Henderson, M. B. (2021). Amid pandemic, support soars for online learning, parent poll shows. *Education Next*, 21(1). ProQuest Document ID: 2475144907.
- Henderson, M. B., Peterson, P. E., Houston, D., & West, M. R. (2021). What American families experienced when COVID-19 closed their schools. *Education Next*, 21(1), 22–31.
- Hillier, M. (2014). The very idea of e-Exams: Student (pre) conceptions. In *Proceedings of ASCILITE 2014-Annual Conference of the Australian Society for Computers in Tertiary Education* (pp. 77–88).
- Hjelsvold, R., Nykvist, S. S., Lorås, M., Bahmani, A., & Krokan, A. (2020). Educators' experiences online: How COVID-19 encouraged pedagogical change in CS education. *Norsk IKT-Konferanse for Forskning Og Utdanning, 2020*: 4.
- Hols-Elders, W., Bloemendaal, P., Bos, N., Quaak, M., Sijstermans, R., & Jong, P. D.

- (2008). Twelve tips for computer-based assessment in medical education. *Medical Teacher*, 30(7), 673–678.
- Hosszu, A., Rughiniş, C., Rughiniş, R., & Rosner, D. (2021). Webcams and social interaction during online classes: Identity work, presentation of self, and well-being. *Frontiers in Psychology*, 12: 761427.
- Hussar, B., Zhang, J., Hein, S., Wang, K., Roberts, A., Cui, J., ... Dilig, R. (2020). *The condition of education 2020 (NCES 2020-144)*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Hyndman, B. (2018). Ten reasons teachers can struggle to use technology in the classroom. *Science Education News*, 67(4), 41–42.
- Ikeda, O. (2022, February). The reality of online education by the busiest Japanese teachers in public primary and junior high schools under COVID19 in Japan. In *Proceedings of the 2nd International Conference on Social Science, Humanity and Public Health (ICOSHIP)* (pp. 40–45). Atlantis Press.
- Ivaniuk, I. V., & Ovcharuk, O. V. (2020). The response of Ukrainian teachers to COVID-19: Challenges and needs in the use of digital tools for distance learning. *Information Technologies and Learning Tools*, 77(3), 282–291.
- James, R. (2016). Tertiary student attitudes to invigilated, online summative examinations. *International Journal of Educational Technology in Higher Education*, 13: 19.
- Jankowski, N. A. (2020). *Assessment during a crisis: Responding to a global pandemic*. National institute for learning outcomes assessment, University of Illinois and Indiana University, Urbana, IL, USA.
- Joshi, A., Vinay, M., & Bhaskar, P. (2020). Impact of coronavirus pandemic on the Indian education sector: Perspectives of teachers on online teaching and assessments. *Interactive Technology and Smart Education*, 18(2), 205–226.
- Kallio, H., Pietilä, A. M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, 72(12), 2954–2965.
- Karasar, N. (1998). *Bilimsel araştırma yöntemi* (15. Baskı). Ankara: Nobel Yayın Dağıtım.
- Kassab, M., DeFranco, J., & Laplante, P. (2020). A systematic literature review on Internet of things in education: Benefits and challenges. *Journal of Computer Assisted Learning*, 36(2), 115–127.
- Khan, N., Sarwar, A., Chen, T. B., & Khan, S. (2022). Connecting digital literacy in higher education to the 21st century workforce. *Knowledge Management & E-Learning*, 14(1), 46–61.
- Kınalıoğlu, İ. H., & Güven, Ş. (2011). *Uzaktan eğitim sisteminde öğrenci başarısının ölçülmesinde karşılaşılan güçlükler ve çözüm önerileri*. Retrieved from https://ab.org.tr/ab11/kitap/kinalioglu_guven_AB11.pdf
- Kuo, Y. C., Walker, A. E., Belland, B. R., & Schroder, K. E. (2013). A predictive study of student satisfaction in online education programs. *International Review of Research in Open and Distributed Learning*, 14(1), 16–39.
- Lai, J., & Widmar, N. O. (2021). Revisiting the digital divide in the COVID-19 era. *Applied Economic Perspectives and Policy*, 43(1), 458–464.
- Lam, Y. (2000). Technophilia vs. technophobia: A preliminary look at why second-language teachers do or do not use technology in their classrooms. *Canadian Modern Language Review*, 56(3), 389–420. doi: 10.3138/cmlr.56.3.389
- Langford, M., & Damşa, C. (2020). *Online teaching in the time of COVID-19 times: Academic teachers' experiences in Norway, universitetet I Oslo*. Retrieved from <https://www.jus.uio.no/cell/pedagogiske-ressurser/evaluating/rappporter/report-university-teachers-160420-with-annex.pdf>

- Larreameydy-Joerns, J., & Leinhardt, G. (2006). Going the distance with online education. *Review of Educational Research*, 76(4), 567–605.
- Lee, J. S., & Bowen, N. K. (2006). Parent involvement, cultural capital, and the achievement gap among elementary school children. *American Educational Research Journal*, 43(2), 193–218.
- Lestianawati, R. (2020). The strategies and problems faced by Indonesian teachers in conducting e-learning system during covid-19 outbreak. *CLLiENT JOURNAL*, 2(1), 71–82.
- Li, Z., & Tian, M. (2021, July). Description of role orientation of college teachers in online education under epidemic emergency. In *Proceedings of the International Conference on Human-Computer Interaction* (pp. 172–182). Springer.
- Mason, R. (1998). Models of online courses. *ALN Magazine*, 2(2), 1–10.
- Masonbrink, A. R., & Hurley, E. (2020). Advocating for children during the COVID-19 school closures. *Pediatrics*, 146: e20201440.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Mouza, C. (2009). Does research-based professional development make a difference? A longitudinal investigation of teacher learning in technology integration. *Teachers College Record*, 111(5), 1195–1241.
- Oladele, H. O., Opele, J. K., Awioro, T. O., Afolabi, A. O., & Awotorebo, O. T. (2022). The perception and attitude of nursing students towards online learning during the Covid-19 lockdown in South West Nigeria. *Knowledge Management & E-Learning*, 14(1), 30–45.
- Perienen, A. (2020). Frameworks for ICT integration in mathematics education- A teacher's perspective. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(6): em1845.
- Putra, P., Liriwati, F. Y., Tahrim, T., Syafrudin, S., & Aslan, A. (2020). The students learning from home experience during covid-19 school closures policy in Indonesia. *Jurnal Iqra': Kajian Ilmu Pendidikan*, 5(2), 30–42.
- Rahayu, R. P., & Wirza, Y. (2020). Teachers' perception of online learning during pandemic covid-19. *Jurnal Penelitian Pendidikan*, 20(3), 392–406.
- Ramij, M., & Sultana, A. (2020). *Preparedness of online classes in developing countries amid COVID-19 Outbreak: A perspective from Bangladesh*. doi: 10.2139/ssrn.3638718
- Ramirez, A. Y. (2002). How parents are portrayed among educators. *The School Community Journal*, 12(2), 51–61.
- Robles, M., & Braathen, S. (2002). Online assessment techniques. *Delta Pi Epsilon Journal*, 44(1), 39–49.
- Ronsisvalle, T., & Watkins, R. (2005). Student success in online K-12 education. *Quarterly Review of Distance Education*, 6(2), 117–124.
- Sarrayih, M. A., & Ilyas, M. (2013). Challenges of online exam, performances and problems for online university exam. *International Journal of Computer Science Issues (IJCSI)*, 10(1), 439–443.
- Shagiakhmetova, M. N., Bystritskaya, E. V., Demir, S., Stepanov, R. A., Grishnova, E. E., & Kryukova, N. I. (2022). Primary teachers difficulties related to compulsory distance education during COVID-19. *Contemporary Educational Technology*, 14(2): ep357.
- Sintema, E. J. (2020). Effect of COVID-19 on the performance of grade 12 students: Implications for STEM education. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(7): em1851.
- Swan, K., Shen, J., & Hiltz, S. R. (2006). Assessment and collaboration in online learning. *Journal of Asynchronous Learning Networks*, 10(1), 45–62.

- Terzis, V., & Economides, A. A. (2011). Computer based assessment: Gender differences in perceptions and acceptance. *Computers in Human Behavior*, 27(6), 2108–2122.
- Thomas, A., Shenoy, M. T., Shenoy, K. T., Kumar, S. S., Sidheeque, A., Khovidh, C., ... Sivendu, P. (2022). Teachers' view on online classes during COVID-19 lockdown—A cross-sectional study. *International Journal of Medical Students*, 10(1), 32–37.
- Todd, R. W. (2020). Teachers' perceptions of the shift from the classroom to online teaching. *International Journal of TESOL Studies*, 2(2), 4–16.
- Tüfekçi, A., Ekinci, H., & Köse, U. (2013). Development of an internet-based exam system for mobile environments and evaluation of its usability. *Mevlana International Journal of Education*, 3(4), 57–74.
- Ünal, M., & Bulunuz, N. (2020). Covid-19 salgını döneminde yürütülen uzaktan eğitim çalışmalarının öğretmenler tarafından değerlendirilmesi ve sonraki sürece ilişkin öneriler. *Milli Eğitim Dergisi*, 49(1), 343–369.
- Urdan, T., & Kaplan, A. (2020). The origins, evolution, and future directions of achievement goal theory. *Contemporary Educational Psychology*, 61: 101862.
- Volery, T., & Lord, D. (2000). Critical success factors in online education. *International Journal of Educational Management*, 14(5), 216–223.
- Waiker, V., Khandal, V., Bankar, M. P., Bankar, N., & Patil, S. (2021). Impact of family concern on the study of students in Covid-19 pandemic. *NVEO-NATURAL VOLATILES & ESSENTIAL OILS Journal/ NVEO*, 8(5), 1365–1369.
- Walters, A. (2020). Inequities in access to education: Lessons from the COVID-19 pandemic. *The Brown University Child and Adolescent Behavior Letter*, 36(8), 8–8.
- White, R. J., & Hammer, C. A. (2000). Quiz-o-Matic: A free web-based tool for construction of self-scoring online quizzes. *Behavior Research Methods, Instruments, & Computers*, 32(2), 250–253. doi: 10.3758/BF03207791
- Wise, S., Greenwood, J., & Davis, N. (2011). Teachers' use of digital technology in secondary music education: Illustrations of changing classrooms. *British Journal of Music Education*, 28(2), 117–134. doi: 10.1017/S0265051711000039
- Xie, J., Wang, M., & Hooshyar, D. (2021). Student, parent, and teacher perceptions towards digital educational games: How they differ and influence each other. *Knowledge Management & E-Learning*, 13(2), 142–160.
- Yao, J., Rao, J., Jiang, T., & Xiong, C. (2020). What role should teachers play in online teaching during the COVID-19 pandemic? Evidence from China. *Sci Insigt Edu Front*, 5(2), 517–524.
- Yao, X., Jin, X., & Liu, B. (2020, Faburay 17). How to teach “school’s out, but class’s on”. *Guangming Daily*, 09. Retrieved from https://epaper.gmw.cn/gmrb/html/2020-02/17/nw.D110000gmrb_20200217_1-09.htm
- Yıldırım, A., & Şimşek, H. (2006). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayınları.
- Zhang, W., Wang, Y., Yang, L., & Wang, C. (2020). Suspending classes without stopping learning: China’s education emergency management policy in the COVID-19 outbreak. *Journal of Risk and Financial Management*, 13(3): 55.
- Zhou, L., Wu, S., Zhou, M., & Li, F. (2020). School’s out, but class on the largest online education in the world today: Taking China’s practical exploration during the COVID-19 epidemic prevention and control as an example. *Best Evid Chin Edu*, 4(2), 501–519.