**TÜRK FEN EĞİTİMİ DERGİSİ**
**Yıl 17, Sayı 4, Aralık 2020**

**Journal of**
**TURKISH SCIENCE EDUCATION**
**Volume 17, Issue 4, December 2020**

http://www.tused.org

# Teachers' Opinions about Distance Web 2.0 Tools Training and Teachers' In-Class Web 2.0 Practices

Emine SAHIN-TOPALCENGIZ [1,2], Bekir YILDIRIM [3]

[1] Res. Asst., Muş Alparslan University, Muş-TURKEY, ORCID ID: 0000-0002-2916-6886
[2] Doctoral Student, Istanbul University-Cerrahpasa, Istanbul-TURKEY
[3] Assoc. Prof. Dr., Muş Alparslan University, Muş-TURKEY, ORCID ID: 0000-0002-5374-4025

**Received:** 03.07.2019 **Revised:** 07.04.2020 **Accepted:** 10.10.2020

The original language of article is English (v.17, n.4, December 2020, pp.561-577, doi: 10.36681/tused.2020.45)

**Reference:** Sahin-Topalcengiz, E. & Yildirim, B. (2020). Teachers' Opinions about Distance Web 2.0 Tools Training and Teachers' In-Class Web 2.0 Practices. *Journal of Turkish Science Education*, 17 (4), 561-577.

## ABSTRACT

This qualitative research aims to determine teachers' opinions about in-class web 2.0 practices after distance professional development involvement. Twelve teachers from different public schools were selected purposefully as a sample group. The Web 2.0 and Distance Training Interview Form (WDTIF) was used after implementing web 2.0 tools in the classrooms to collect data. All interviews were audio-taped and transcribed. Then the data were analyzed by content analysis. The data analysis revealed that participating teachers recognized the different features of web 2.0 tools. Furthermore, it was found that teachers used web 2.0 tools for assessment, to create opportunities for collaboration, and to improve students' learning experience and engagement. Teachers also mentioned that distance education allowed them to participate in a professional learning community besides offering training opportunities. Distance education was also an affordable option for teachers who needs to travel to a distant location. During the interviews, the disadvantages of distance education were pointed out as well. These disadvantages were internet connection problems, lack of motivation and confidence, and face-to-face interaction. Further investigations were carried out to understand other related impacts of using web 2.0 tools in the classroom and distance teacher learning that arose during the study.

**Keywords:** Distance learning, web 2.0 tools, teachers, professional development.

## INTRODUCTION

The development of information and communication technology has changed many aspects of life. If one compares fields such as education are considered, the use of technology has brought significant changes. The role of teachers, students, and schools has changed due to these rapid technological developments. These changes also affected research trends in education. Technology and its contributions to education have gained attention as a field of interest (Arat, & Bakan, 2011). Preparing teachers to use technology effectively in the

Correspondence author e-mail: eminesahin59@gmail.com

classroom also raised researchers' attention to develop this topic in detail (Bolick, Berson, Coutts, & Heinecke, 2003).

Teachers spend their entire lives surrounded by and using technology tools, yet they do not implement advances of technology in the classroom (Prensky, 2001). Due to a lack of technology integration training in teacher preparation programs, teachers lack experience and do not feel confident about implementing technology in the classroom (Carver, 2016; Lu, & Lei, 2012). Integrating technology into instruction requires having powerful technology, pedagogy, and content knowledge. As technology advances, the possibilities of using web-based technologies in education increases and benefits students of all ages. Blogs, wikis (What I Know Is), social networking are web-based technologies, and their use in education has emerged in recent years.

Web 2.0 tools allow users to communicate and collaborate while learning (Ajjan, & Hartshorne, 2008; O'reilly, 2005). For example, through different platforms, Wikis (What I Know is), individuals create Wikis, change content via adding, deleting, or editing. Wikis allow teachers to track students' learning progression and improve students' writing skills (Jonassen et al., 2008). Individuals use blogs to create and share their content with others. Blogs in education settings could be used for different purposes, including a source of information among teachers (Shaffer, Lackey, & Bolling, 2006) and a tool for improving writing skills and collaborative learning (Blood, 2002; Korucu and Yucel, 2005). Any individual with simple recording devices such as computers with access to the Internet may create recordings and publish them on different online platforms. In classrooms, podcasts could promote programs, activities, share school news, and record fields and classrooms (Williams, 2007). Social networking sites, including Facebook, Twitter, and Instagram, provide users a platform to create their profile, connect with others, and share opinions with their friends. Social networks are used for informal learning purposes, cross-cultural language learning (Selwyn, 2007). These tools are also used for creating a poster, a presentation, or a video; to brainstorm and assess (Aybat, & Dogan, 2017). Web 2.0 tools allow individuals to use higher-order thinking skills and problem-solving skills (Korucu, & Yucel, 2015). Web 2.0 tools allow users to work together and communicate by removing access barriers (Korucu, & Yucel, 2015) and increasing students' achievement (O'Bannon, & Britt, 2012).

Despite the popular belief that Web 2.0 tools are vital and beneficial for learning, some studies revealed that teachers do not use these tools due to the following reasons: lack of knowledge, lack of technical equipment, and parents' fears (Blannin, 2015; Chen, 2012; Korucu, & Karalar, 2017). Teachers are primarily responsible for integrating and using Web 2.0 tools in educational settings. Quality professional development cultivates teachers' skills and knowledge to integrate technology. Therefore, teachers should be equipped with the skills to integrate technology (Akpinar, 2003). Pan and Franklin (2011) identified three factors, including meaningful professional development and school administrative support, and self-efficacy affect classroom teachers' Web 2.0 tool implementation. Thus, teachers must continuously learn new technologies and know-how to implement them in the classroom. Different methods are used among educators to distribute information such as bulletins, professional development courses, workshops. Traditionally professional developments are designed for a short period, which can be one day or a week (Lieberman, & Pointer-Mace, 2008). With the rapid growth of the Internet, alternative delivery methods for professional development appeared (Lieberman & Pointer-Mace, 2008).

Distance education refers to a learning situation where the learner and the instructor are in different locations through different communication technologies (Usun, 2006; Belanger, & Jordan, 2000). Content in distance education is usually delivered via videos, video-conferencing systems, video-streaming (Fairbarn et al., 2000). Distance education provides a solution for education barriers such as lack of participants' time, availability of

professional development courses, funding, and travel expenses (Brown & Green, 2003; Karasar, 2004; Tyre, 2002).

Teachers especially working in disadvantaged areas, have no access to professional development. Therefore, governmental agencies support distance professional development (DPD) (Arat, & Bakan, 2011). DPD opens the door to many busy teachers that have no funds for participating in teacher training or have other similar restrictions (Yildiz, 2004). Most online professional development courses have set deadlines, allow participants to log on, participate in a discussion at any time that teachers are convenient, and complete the assignments (O'reilly, 2005). This flexibility in DPD allows learners to collaborate with other teachers to learn emerging technologies and instructional designs (Brown & Green 2003). Distance professional development does have barriers, too. These barriers are poor technology skills of users, inadequate access to the Internet or software, the feeling of isolation, and lack of motivation (Brown & Green 2003; Tyre, 2002). These barriers to the implementation of distance professional development are limited and easily overcome with careful planning.

Teachers are digital immigrants who have not grown up in the digital world (Prensky, 2001). Most of them were educated in the traditional education system and are not familiar with the use of technology in the classroom. Therefore, they are far behind digital narratives that grow up in a technology-rich environment (Prensky, 2001). Despite the efforts to train teachers on the implementation of technology, specifically Web 2.0 tools in the classroom, teachers still lack implementing Web 2.0 tools in their teaching (Wells & Lewis, 2006). The effective use of Web 2.0 technologies in education depends on teachers` proficiency level to integrate web 2.0 technologies into the curriculum, teachers` experience with Web 2.0 tools, and teachers` views and knowledge of web tools (Teo et al., 2019). For this reason, previous studies have explored the potential factors that explain teachers` intention to use web technologies. Teachers` positive intentions towards using technologies is a significant predictor of successful integration in the classroom (Sadaf et al., 2015; Alhassan, 2017; Ozerbas and Akin-Mart, 2017; Yaylak ve Inan, 2018; Caliskan et al., 2019; Teo et al.,2019; Onbasili, 2020). However, other factors including self-efficacy (DoBell, 2013; Efe, 2015; Alhassan, 2017; Birisci et al., 2018; Onbasili, 2020), available resources and technology in the schools (Alhassan, 2017; Yordming, 2017; Yaylak ve Inan, 2018; Alenezi, 2019; Okumus, 2019; Onbasili, 2020), personal factors ( i.e., one teacher behavior influenced by her coworker) (Alhassan, 2017; Yaylak ve Inan, 2018; Alenezi, 2019), perceived usefulness of technology integration into teaching, and the ease of use (Majhi and Maharana, 2011; Alhassan, 2017; Altiok et al., 2017; Yaylak ve Inan, 2018; Okumus, 2019; Teo et al., 2019) also affects the integration of Web 2.0 technologies into teaching. Although different studies have explored the factors influencing teachers` intentions to use Web 2.0 tools, only limited studies have examined teachers` actual practices of Web 2.0 tools. Furthermore, there is no study regarding using the DPD program to enhance teachers' skills and professional knowledge about Web 2.0. Previous research also revealed that professional development regarding technology integration cultivates teachers' professional knowledge and skills for practicing Web 2.0 tools in the classroom (Lumpe, & Chambers, 2001). Due to teachers' professional development limitations, distance professional development becomes a way to enhance teachers' skills and knowledge. Therefore, we developed a DPD program for teachers from different subject areas. This study aimed to determine teachers' opinions about the Web 2.0 tools, DPD program, and teachers' in-class Web 2.0 practices. Two research questions guided this study are: (1) What are the teachers' opinions regarding their implementation of Web 2.0 tools in the classroom? (2) What are teachers' opinions regarding the DPD program about Web 2.0 tools?

## METHODS

### a) Research Design and Study Group

Teachers' opinions about in-class web 2.0 practices and distance professional development (DPD) program about Web 2.0 technologies were investigated with a case-study design. Based on research and descriptions by Merriam (2015), this study examined carefully various areas ranging from interviewing the participating teachers, training them to use and integrate Web 2.0 tools in the classroom, and interviewing with teachers after classroom implementation.

A convenience sampling method was used to select twelve teachers (four male and eight female; ages range 21-45; three middle school science teachers, two elementary school science teachers, three kindergarten teachers, one computer education (ICT teacher) from different public schools. The convenient sampling method allows researchers to select subjects that represent the population and are most convenient to recruit for the study (Balci, 2016; Yildirim, & Simsek, 2005). The participating teachers volunteered to participate in the study because they were comfortable using the Internet, were eager to learn new technologies, and adapt to their instruction methods.

### b) Data Collection

The data were collected with semi-structured interviews with teachers after implementing Web 2.0 technologies in the classroom. Interviews are vital tools in qualitative research to collect detailed and meaningful information from interviewees and contribute a body of knowledge that is conceptual and theoretical (Yin, 2003). Semi-structured interviews allow an interviewer to be a part of the interview process and expand the interviewee's responses (Merriam, 2015). After teaching, interviews with the teachers helped the researchers construct a general understanding of how DPD about Web 2.0 technologies affected teachers' teaching practices. The researchers developed the interview protocol, Web 2.0, and Distance Training Form (WDTIF), based on the literature. Interview questions provided understanding and insight for interviewees and guided conversations rather than solid questions (Merriam, 2015; Patton, 2014). The first draft of the WDTIF consisted of 15 questions and modified after four experts' opinion was taken. The modified version of the form was used in interviews with five teachers who enrolled in the DPD program. After the pilot study, interviewing five teachers, necessary changes were made, the latest version of the form was created. The latest version of the WDTIF consisted of 14 questions. After participants involved in the DPD program and the teaching, interviews were conducted with teachers. Each teachers' interviews were audio-recorded and lasted for 30-45 minutes.

### c) Data Analysis

To determine teachers' opinions about in-class web 2.0 practices and distance professional development (DPD), the data collected from an instrument, the WDTIF, and analyzed with content analysis methods. Through content analysis, a large amount of data transforms into a summary of the results (Mostyn, 1985). The authors transcribed data from interviews. Each teacher in the study was represented with the letter "T." The numbers from 1 to 12 were used to label teachers as well. Teachers' identities were kept anonymous. Following, researchers read teachers' transcribed interviews separately then discussed their interpretations of data. Researchers agreed on the codes and perceived the meaning of teachers' responses. Inter-coder reliability was calculated by using the following formula “[(Consensus / Consensus + Disagreement) * 100]”and found as 91/113) * 100) = 0.81%

(Miles, & Huberman, 1994). Since the inter-coding results were above 80%, the coding was reliable (Miles, & Huberman, 1994).

### d) Distance Professional Development

Participating teachers received six weeks (2 hours per week) DPD regarding Web 2.0 technologies (Table 1).

**Table 1.** *The content of the Web 2.0 DPD*

| Week | Objectives | Subject | Time |
|---|---|---|---|
| 1 | To understand the aim of the research study, its importance, and ethical norms. | Introduction to the study | 2 hours |
| | To understand the nature of technology and technological literacy. | Nature of technology<br>Introduction to technological literacy | |
| 2 | To learn technology practices and the ways of integrating them into classroom instruction | Technology practices and their application in the classroom | 2 hours |
| 3 | To learn Web 2.0 Technology | Web 2.0 Technology | 2 hours |
| 4 | To learn Web 2.0 technology, practice them in different scenarios | Web 2.0 Technology | 2 hours |
| 5 | To learn Web 2.0 technology; practice them in different scenarios; develop a lesson in different content areas. | Web 2.0 Technology | 2 hours |
| 6 | Being able to use Web 2.0 Technology appropriately. | Web 2.0 Technology | 2 hours |

DPD was developed in three stages (Figure 1): (1) The content of the DPD about Web 2.0 technologies were created. (2) Pilot study: One teacher volunteered to participate in DPD. Researchers analyzed the strengths and weaknesses of Web 2.0 curriculum; the teacher's feedback about the curriculum collected; curriculum revision made based on researchers' observations, experiences, and teacher's feedback (3) DPD: The DPD took six weeks and was carried out in two different portals: eTwinning(www.etwinning.net) and Sinnif (https://www.sinnif.com/). eTwinning is a part of the Lifelong Learning Community Program of the European Commission and brought the different communities of schools and researchers in Europe. Sinnif is a Turkish online platform in which educators teach different subjects in an online environment. Teachers were required to complete the activities that the researcher developed and collaborated with colleagues on documents using Google Docs and Spreadsheet (http://docs.google.com/). Teachers used Prezi (https://prezi.com/) to create a presentation, created assessment activities with Kahoot (https://kahoot.com/), created lesson plans using Google Docs and collaborated with other participants, created concept maps (https://www.mindmeister.com/), used Padlet (https://padlet.com/) to follow announcements and homework, and QR codes (https://www.qrstuff.com/). All these activities are potential direct applications in the classroom. A deductive approach was adopted for the training.

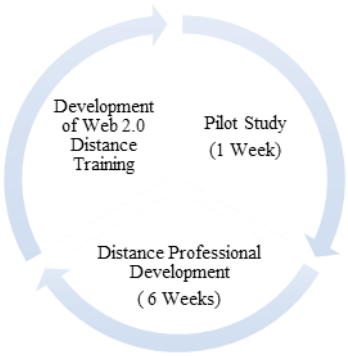


***Figure 1.*** Stages of Training Process

## FINDINGS

The results of the semi-structured interviews were summarized based on the codes that emerged from teachers' answers. First, teachers were asked to define Web 2.0 to explore their perceptions of Web 2.0. According to participant responses: "Web 2.0 is a collection of applications where the users interact with content through internet technologies.", "Web 2.0 technologies aim to enhance creativity, information sharing, collaboration among students-students and students-teachers. Tools also improve communication among teachers, parents, and students, help students to solve learning problems, facilitate learning, improve instructional activities, enable to track students' learning, support meaningful learning". For instance, T1 reflected: "Web 2.0 is an interactive environment where students enhance interpersonal relationship skills. Students will use different platforms, such as Google Docs, to leave comments on each other's work. They evaluate each other's work, improve their work." T4 commented, "Web 2.0 technology empowers students' problem-solving skills. While working together, students undertake different roles, possibly this leading to improve their problem-solving skills, communication skills as well." T10 pointed out, "Web 2.0 influences teaching because teachers can communicate with the students and parents. Web 2.0 will help science teachers teach the topic in-depth. They can go beyond the book. Even some applications can help students to understand abstract ideas. Things that students cannot see are hard to teach for the teachers. Various applications will provide different students' learning environment."

Next, the importance of using Web 2.0 in the classroom was asked to the teachers. Using Web 2.0 technologies allow participants to have a voice, support student-centered syllabus. Web 2.0 technologies also encourage students to become responsible for their learning, gain knowledge and skills critical for today's workforce, allow teachers and students to exchange ideas and experiences, and expand their knowledge and professional capabilities. For instance, T3 stated, "Teachers and students must have Web 2.0 skills and network building skills. They should have social media responsibility and practice. Being an active participant in Blogs, wikis, social networking, and other collaborative tools enhance these skills. These skills are critical for today's information technology, and workforce demands these skills as well." T12 reflected, "Web 2.0 technologies are easy to use and available for everyone. Teachers and students can easily access these tools and receive content updates. They offer a unique way of sharing information." T9 highlighted, "Web 2.0 technologies increase student engagement. For instance, students can use the podcast to deepen their learning."

The third research question examined the benefits of Web 2.0 technologies. The results of the study indicated that the participants think that the use of Web 2.0 technologies has significant benefits, including (1) Social (2) Professional (3) Technological (Table 2).

Teachers mentioned that using Web 2.0 technologies in teaching helps students build a sense of community, increases communication and collaboration among student-student and student-teacher, and allows sharing stories from a distance. For instance, T10 reported, "This year I communicated with my students through Easy Class outside of the classroom. I uploaded sources, homework through the website. Students discussed the classroom materials on discussion forums before teaching. I believe this allowed my students to connect with their classmates and me outside of the classroom."

T11 stated, "Edmodo postings, comments, and feedbacks were the first interactive environment my students had experienced." The Use of Web 2.0 technologies also enhance students' motivation, enrich students' learning experiences, increase students' engagement with content, create opportunities for students to collaborate, allow students to engage with new literacies, creates a sense of ownership in learning, support the use of alternative assessment methods. For instance, T4 stated, "I used Molecular Workbench (http://mw.concord.org/modeler) along with physical models to teach face change. This technology allowed students to visualize invisible structures such as atoms, molecules. During the class, I also created questions with Kahoot. Students enjoyed the activity."

Furthermore, teachers reported that Web 2.0 tools are easy to use, save time, and save copying materials costs. Web 2.0 technologies provide a flexible learning environment that extends learning beyond the classroom. For example, T2 stated, "Students took a virtual trip to Field Museum and explored the fossils without traveling anywhere or paying any money. Since my students were low-income, virtual field trips are a great way to bring outside to the inside of the classroom."

**Table 2.** *Advantages of Web 2.0 technologies*

| Theme | Code | Teachers |
|---|---|---|
| Social | Freedom to share | 4, 6, 3 |
| | Encourage collaboration among students | 1, 10 |
| | Relationship building from a distance | 7, 10 |
| | Connecting with other's stories | 9, 11 |
| Professional | Facilitate motivation among students | 6, 11, 8 |
| | Support 21st century learning | 2, 8, 11, 1, 3, 4, 10, 9 |
| | Support the use of alternative assessment | 7 |
| | Facilitate teaching | 6, 7, 9, 11, 12 |
| | Increase in Technology literacy | 7, 12 |
| | Responsibility | 9, 11 |
| Technological | Cost savings | 2, 3, 10, 9, 7 |
| | Time-saving | 12, 4, 6, 8 |
| | Flexibility | 1, 4, 5, 10, 12, 11 |

Table 3 illustrates the teachers who use Web 2.0 technologies in the classroom. Notably, there is heavy use of Web 2.0 technologies in the classroom.

**Table 3.** *The Frequency of Web 2.0 Technology Use*

| Theme | Code | Teachers |
|---|---|---|
| The Use of Web 2.0 Technologies | Frequency | |
| | Always | T1, T3, T4, T6, T7, T10 |
| | Sometimes | T2, T5, T11, T12 |
| | Frequently | T8, T9 |

The fifth research question examined the areas of Web 2.0 technologies use in the classroom. The results of the study indicated that Web 2.0 technologies were used for different purposes, including (1) Content share, (2) Teaching, (3) To create visuals and books, (4) Communication, (5) Assessment (Table 4). For example, T4 mentioned, "I created a classroom Wiki to share educational databases such as Britannica Encyclopedia's, Bilim Cocuk (Science and Kid)." T12 also highlighted, "I used Padlet to announce students' homework and Prezi to create a presentation. Also, I should not forget Kahoot. It is a fun way to ask questions."

**Table 4.** *The areas of Web 2.0 Technologies Used*

| Theme | Code | Teachers |
|---|---|---|
| Content share | Weebly | T4 |
| | Google classroom | T8, T12, T4 |
| | Easy class | T11, T1, T3, T10 |
| | Edmodo | T11 |
| | Wiki | T4 |
| Creating visuals and books | Canva | T5, T6, T7, T10 |
| | Book creator | T9 |
| Teaching | Edpuzzle | T9, T10 |
| | Prezi | T3, T12 |
| | Quiver, expeditions | T1, T6 |
| | Animato | T8, T5 |
| | Youtube | T11, T8 |
| | Pawton | T1 |
| Communication | WhatsApp | T3, T7 |
| | Facebook | T2 |
| | Padlet | T6, T10, T12 |
| | Classdojo | T4 |
| Assessment | Kahoot | T4, T7, T9, T11, T12 |
| | Quizizz | T7, T11 |

Following, the barriers that teachers faced while implementing Web 2.0 technologies were asked. Teachers stated that due to limited access to technology resources such as blocked websites and computer labs, they could not use Web 2.0 technologies. Additionally, T2 explained that she did not use Web 2.0 technologies because it does not match the lesson goals she was teaching. Other respondents mentioned that since eighth-grade curricula were information-dense, and teachers prepare students for the national exams, they often prefer not to use Web 2.0 tools. Technology addiction, training expenses, time management, and noise were other barriers teachers explained during the interviews.

**Table 5.** *Barriers to Web 2.0 implementation*

| Theme | Code | Teachers |
|---|---|---|
| Barriers | Technology addiction | T1, T6, T7, T12 |
| | Time management | T3, T7, T10 |
| | Lack of social interaction | T6, T8 |
| | A lack of available/working technology | T3, T10 |
| | Limits creativity | T5 |
| | Not suitable for every lesson goal | T2 |
| | Information-dense curriculum | T7 |
| | Expenses for training | T10, T8 |
| | Noise | T11 |

The second part of the interview was designed to determine teachers' opinions regarding DPD about Web 2.0 tools. The first question examined how DPD affected teachers' use of Web 2.0 technologies. Most of the teachers indicated that DPD affected their teaching positively and generally enjoyed learning Web 2.0 (Table 6). For instance, T2 mentioned that "DPD positively affected my teaching. I integrated Web 2.0 into my teaching and maximized the learning opportunities for my students. I started to use a variety of technologies. During the training, I also developed new skills, and the skills have opened a new aspect of my profession." Even though most teachers expressed the advantages of taking DPD, two teachers shared their unexpected responses with the researchers. The participant said, "Some teachers own their learning process and thus may choose to drop out when they want to. Drop out of the course was unlike in a traditional school system where learning is strictly controlled. I believe when the teacher thinks they learned enough; they drop out." As stated, teachers consider dropout positively. Leaving the course without completing means, the teacher already gained enough knowledge and skills. This finding raises the question, "Is the definition of dropout in distance education different than dropout in the traditional school system?"

**Table 6.** *The effect of DPD on Web 2.0*

| Theme | Codes | Number of Teachers |
|---|---|---|
| Effects of DPD | Positive | 9 |
| | Negative | 3 |

Next, teachers were asked to define what benefited them while participating in DPD. Teachers noted the ability to work anytime, the ability to work from Internet-accessible computers, no money cost, the flexibility of reaching the course materials, and contribution to teachers' professional knowledge (Table 7). For example, T5 said, "DPD is suitable for teachers who live in disadvantaged regions. There is no professional development about Web 2.0 in my area. Therefore, this course has benefitted me." T10 also pointed out, "With this course, I gained information about Web 2.0, started to integrate into my curriculum."

**Table 7.** *Reasons for taking DPD about Web 2.0*

| Theme | Codes | Teachers |
|---|---|---|
| Reason of taking | Quality of the trainer | T1, T3, T5, T7, T8, T9, T11 |
| | Contribution to professional development | T2, T5, T10, T11, T12 |
| | Ability to work anytime | T1, T4, T6, T7, T11 |
| | Location | T1, T5, T6, T7 |
| | Variety of course offerings/ Pre-packaged course materials | T1, T2, T5, T9 |
| | Distance | T1, T4, T5 |
| | Ability to work from any Internet-accessible computer | T4 |
| | The flexibility of reaching the course materials | T9 |
| | Stipend | T3 |

Teachers were asked how DPD about Web 2.0 benefitted their qualifications (Table 8). Data suggest that teachers were unfamiliar with Web 2.0 and ill-prepared to use Web 2.0 tools before the DPD. After the DPD, teachers gained knowledge about Web 2.0 technology. They developed lesson plans. After teaching, respondents claimed they gained an understanding of how to integrate Web 2.0 pedagogically. Teachers' interest was also increased even if some teachers still have limited technological equipment. This result was unexpected, and future research would need to be conducted to investigate how a lack of equipment affects teachers' interest.

Furthermore, teachers stated that they used social networks, wikis after they gained prerequisite technological knowledge. Since teachers understand the technological aspects of pictures on the Internet and the videos, they know how to use them pedagogically within lessons in different content areas. Teachers highlighted that their Technological Pedagogical and Content Knowledge (TPACK) did change. For instance, T1 said, "I did not know how to integrate Web 2.0 before DPD. For instance, after the course, I learned Web 2.0 technologies such as Edmodo, Google Classroom, and Kahoot. Moreover, in the class, I tried to use them in different content and observed students. Based on feedback that I received them, I understand how to use them." Another teacher, T4, stated, "I posted thought-provoking questions every week in Google Classroom, and students commented. I used a rubric to assess students' posts and comments."

**Table 8.** *Effects of DPD on teachers' qualifications*

| Theme | Codes | Teachers |
|---|---|---|
| Technological Pedagogical Content Knowledge (TPACK) | Technological knowledge | T1, T2, T4, T10 |
| | 21st-century skills knowledge | T3, T7, T8, T9 |
| | Content knowledge | T6, T9, T11, T12 |
| | General knowledge | T5, T9 |
| | Pedagogical content knowledge | T6, T12, T3, T2, T10 |
| | Technological pedagogical content knowledge | T2 |

Teachers were asked to barriers while participating in DPD. They listed barriers as lack of time, face-to-face interaction, lack of motivation, technology addiction, slow Internet,

lack of confidence, and familiarity with the online system (Table 9). For example, T3 said, "While I was in the system, external factors such as the cry of my kid distract me." T10 also highlighted another point "Slow internet connection, and internet cut off is a big problem for me." T11 stated, "I used to spend less time on Social media sites such as Facebook, Twitter. However, after participating in this course, I found myself spending more time on Social Media, especially while I was waiting for scheduled course time."

**Table 9.** *Barriers of DPD*

| Theme | Codes | Teachers |
|---|---|---|
| Barriers | Lack of face-to-face interaction | T1, T3, T4, T5, T6, T8, T9, T10, T12 |
| | Lack of motivation | T2, T7, T8 |
| | Lack of confidence | T8 |
| | Lack of familiarity with the system | T3, T9 |
| | Technology addiction | T2, T4, T11 |
| | Technical difficulties including slow Internet connection | T10 |

## DISCUSSION and CONCLUSION

The study investigated teachers' opinions about in-class web 2.0 practices and distance training. Interview data revealed that teachers define Web 2.0 as a collection of technologies where users interact with content through internet technologies. Web 2.0 technologies enhance creativity, information sharing, collaboration among students-students and students-teachers. Furthermore, Web 2.0 technologies improve communication among teachers, parents, and students, help to solve learning problems, facilitate learning, improve instructional activities, enable to track students' learning, support meaningful learning. Findings in the studies (Aijan, & Hartshorne, 2008; Cheung, & Lee, 2010; Korucu, & Karalar, 2017) are further supported by this current study since teachers` definition of Web 2.0 has similarities with the definitions in these studies. In these studies, Web 2.0 technologies were defined as a collection of tools that improve students' interaction, motivation, facilitate teaching, enhance learning experiences.

Teachers use Web 2.0 technologies for different purposes: (1) to encourage students to increase their voice in the classroom (2) to support collaboration among students (3) to facilitate students' motivation (4) to increase technology literacy and to facilitate teaching (Becta, 2008; Boulous, & Wheelert, 2007; Dabbagh, & Kitsantas, 2012; Dumitrescu, 2015; Greenhow, Robelia, & Hughes, 2009; Hartshorne, & Ajjan, 2009; Huang, Jeng, & Huang, 2009; Kamel-Boulos, & Wheeler, 2007; Karvounidis et al., 2014; Vance, 2012; Rogers-Estate, 2014; Joebagio, &Akhyar, 2018 ). The current findings are similar to some of the previous literature. Korucu and Yucel (2015) pointed out that the use of Web 2.0 technologies support students to be active learners and facilitate teaching. Tekinarslan (2008) and Redecker et al. (2009) also concluded that the use of Web 2.0 technologies increase students' motivation. Teachers mostly used wikis, google classroom, social networking sites, and photo/video sharing sites, which corresponds with the findings of Korucu and Karalar (2017) (Table 4). Korucu and Karalar (2017) claimed that teachers used different Web 2.0 technologies, including Facebook, Prezi, Lawton, Videocast, Social Networks, Blog, Google tools, measurement, and evaluation tools for teaching. Teachers used Web 2.0 technologies for different purposes: (1) Content share (2) Teaching (3) To create visuals and books, (4) Communication, (5) Assessment. For instance, teachers used Youtube to share content or as an instructional delivery tool, and to facilitate motivation. Blogs, on the other hand, are used in other studies (Bennett et al., 2012; Churchill, 2011; Lei et al., 2012) to share content as

well. These results suggest that teachers' proficiency, familiarity with Web 2.0 technologies affect technology use. Ertmer and Ottenbreit-Leftwich (2010) argued teachers' skills and knowledge for using technology significantly affect teachers' classroom use of Web 2.0 technologies. Furthermore, this study shows that social networking sites are commonly used among teachers. This finding did not agree with the results that other researchers claimed (Gray et al., 2010; Lenhart & Madden, 2007). The previous literature claimed that though teenagers frequently used social networking sites, teachers did not use them.

Findings from the second part of the interviews are consistent with the findings from the review of the literature. Teachers agree with the benefits of DPD, as identified in the literature. Teachers in rural areas often have to travel great distances from their cities to receive professional development. Teachers may spend up to 1000 TL in travel costs, and spend several days away from family and classroom. Time is also another determining factor that affects teachers' participation in DPD. Going to the workshop means time away from class and family. This study shows that DPD requires less time away from class and family and offers flexible scheduling, which corresponds with the findings of Taslibeyaz, Karaman, and Goktas (2014). They found that DPD shortened the training duration, implementation, and evaluation of the practices and direct access to information empowered teachers TPCAK (Gurbuz, 2014; Hammond, Rennie, & Dickson, 2007; Sirin, & Tekdal, 2015). DPD reduces the isolation that rural teachers face and allows them to reach out to other colleagues (Herrington, & Herrington, 2001). Teachers agree that DPD offers ongoing support from other teachers and internet resources.

Participating in a distance-delivered professional development requires teachers to be self-motivated. Distance learning places a large amount of responsibility on teachers. Teachers interviewed in the study see this as a barrier, which agrees with a study conducted by Muhirwa (2009). Muhirwa (2009) reported that teachers lack motivation during the DPD. Teachers also shared other barriers as identified in the review of literature such as lack of confidence, lack of face-to-face interaction, lack of familiarity of the system that used for DPD, technical difficulties including slow Internet connection (Becta, 2008; Bingimlas, 2017; Muhirwa, 2009; Rowland, & Rubbert, 2001). Bingimlas (2017) stated that DPD causes spending more time on the Internet, especially while waiting for instruction. Internet connection problems are another concern that arose in the study. Teachers did not share some of the barriers, including technology addiction, which was mentioned in the literature.

Teachers described the DPD experience positive. They were satisfied with the DPD; mentioned that in terms of professional development outcomes, they were similar. This finding was supported by other researchers (Carswell, & Venkatesh, 2002; Gurbuz, 2014; Housing, 2004; King, 2001; O'malley, & McCraw, 1999). Teachers also mentioned DPD improved teachers' Technological Knowledge, 21st-century skills Knowledge, Content Knowledge, General knowledge, Pedagogical Content Knowledge, and Technological Pedagogical Content Knowledge (Bacigalupo, Ferrari, & Punie, 2009; Beldarrain, 2006; Dexter, Anderson, & Becker, 1999; Fahad, 2009; Usal, & Albayrak, 2005; Usta, & Korkmaz, 2010).

Some research limitations are considered in this study. First, this case study lacks statistical generalizability. Statistical generalization was not the goal of the case study. Second, since the researchers developed and taught DPD, their biases, prejudices, and attitudes shaped the interpretation of the findings. Interviews were used as only one data source, and it may be possible that these biases still exist. Using multiple data sources reduces biases and allow researchers to triangulate the information.

While this study examined teachers' opinions about in-class web 2.0, further longitudinal research needs to be conducted to determine the factors influencing teachers'

intent, level of use, and ability to integrate Web 2.0 in the classroom. Future researchers also should conduct classroom observations about the ways of teachers' technology integration.

## REFERENCES


Ajjan, H., & Hartshorne, R. (2008). Investigating faculty decisions to adopt Web 2.0 technologies: Theory and empirical tests. *The Internet and Higher Education, 11*(2), 71-80. https://doi.org/10.1016/j.iheduc.2008.05.002

Akpınar, Y. (2003). Öğretmenlerin Yeni Bilgi teknolojileri kullanımında yükseköğretimin etkisi: İstanbul okulları örneği (The effects of higher education on teachers' use of new technologies: The Case of Schools in Istanbul). *The Turkish Online Journal of Educational Technology, 2*(2), 79-96. http://www.tojet.net/articles/v2i2/2211.pdf

Alenezi, F. Y. (2019). Academic Staff Use of Web 2.0 Tools and Factors Affecting Its Implementation at Northern Border University in the Kingdom of Saudi Arabia. *Dirasat: Educational Sciences,* 46(1). Retrieved from: https://dirasat.ju.edu.jo/ES/Article/FullText/12623?volume=46&issue=1

Arat, T., & Bakan, Ö. (2011). Dıstance educatıon and applıcatıons. *Journal of Selçuk University Social Sciences Vocational School, 14*(1-2), 363-374.

Balcı, A. (2016). *Sosyal bilimlerde araştırma yöntem teknik ve ilkeleri [Research Methods and Technologies in Social Science]*. Ankara, Turkey: Pegem Akademi Yayıncılık [Pegem Academy Publishing].

BECTA (2008). *Web 2.0 technologies for learning at key stages 3 and 4.* Coventry, UK: British Educational Communications Technology Agency.

Belanger, F. & Jordan, D.H. (2000). *Evaluation and implementation of distance learning: Technologies, tools, and techniques*. Hershey, PA: Idea Group Pub.

Beldarrain, Y. (2006). Distance education trends: Integrating new technologies to foster student interaction and collaboration. *Distance Education, 27*, 139-153. https://doi.org/10.1080/01587910600789498

Birişçi, S., Kul, Ü., Aksu, Z., Akaslan, D., & Çelik, S. (2018). Web 2.0 hızlı içerik geliştirme özyeterlik algısını belirlemeye yönelik ölçek geliştirme çalışması [Web 2.0 rapid content development self-efficacy perception scale]. *Eğitim Teknolojisi Kuram ve Uygulama [Educational Technology Theory and Practice]*, 8(1), 187-208.

Bingimlas, K. A. (2017). Learning and Teaching with Web 2.0 Applications in Saudi K-12 Schools. *TOJET: The Turkish Online Journal of Educational Technology, 16*(3), 100-115. https://files.eric.ed.gov/fulltext/EJ1152646.pdf

Blannin, J. (2015). The role of the teacher in primary school Web 2.0 use. *Contemporary Educational Technology*, *6*(3), 188–205. https://files.eric.ed.gov/fulltext/EJ1105760.pdf

Blood, R. (2002). *The weblog handbook: Practical advice on creating and maintaining your blog.* Cambridge, MA: Perseus Publishing.

Bolick, C., Berson, M., Coutts, C., & Heinecke, W. (2003). Technology applications in social studies teacher education: A survey of social studies methods faculty. *Contemporary Issues in Technology and Teacher Education, 3*(3), 300-309.

Boulos M. N., & Wheeler, S. (2007) The emerging Web 2.0 social software: An enabling suite of sociable technologies in health and healthcare education. *Health Information and Libraries Journal, 24*(1), 2-23. DOI: 10.1111/j.1471-1842.2007.00701.x

Brown, A., & Green, T. (2003). Showing up to class in pajamas (or less!): The fantasies and realities of online professional development courses for teachers. *Clearing House, 76*(3),148-151.

Caliskan, S., Guney, Z. Sakhieva, R. G., Vasbieva, D. G., Zaitseva, N. A. (2019). Teachers' Views on the Availability of Web 2.0 Tools in Education. *International Journal of Emerging Technologies in Learning*, 14 (22), 70-81.https://doi.org/10.3991/ijet.v14i22.11752.

Carswell, A.D., & Venkatesh, V. (2002). Learner outcomes in an asynchronous distance education environment. *International Journal of Human-Computer Studies, 56*(5), 475-494. doi:10.1006/ijhc.1004

Carver, L. B. (2016). Teacher perception of barriers and benefits in K-12 technology usage. *Turkish Online Journal of Educational Technology-TOJET, 15*(1), 110-116.

Chen, Y. L. (2008). Modeling the determinants of Internet use. *Computer & Education, 51*(2), 545-558.

Cheung, C. M., & Lee, M. K. (2010). A theoretical model of intentional social action in online social networks. *Decision Support Systems, 49*, 24-30. Doi: 10.1016/j.dss.2009.12.006

Dabbagh, N., & Kitsantas, A. (2012). Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The Internet and Higher Education, 15*(1), 3-8. doi:10.1016/j.iheduc.2011.06.002

Dexter, S., Anderson, R. E., & Becker, H. J. (1999). Teachers' views of computers as catalysts for changes in their teaching practice. *Journal of Research on Computing in Education, 31*, 221-239. https://doi.org/10.1080/08886504.1999.10782252

DoBell, R. (2013). The Relationship between Montana Science Teachers' Self-Efficacy and The Integration of Web2.0 Elements in The Classroom in Schools with a Student Population Over 900 (Unpublished Doctoral Thesis). The University of Montana.

Dumitrescu, V. M. (2015, April). One step ahead: from Web 1.0 to web 2.0 technologies in higher education. *The 4th International Scientific Conference: eLearning and Software for Education: eLSE*. Bucharest. Romania: CAROLI, National Defence University Publishing House.

Efe, H. A. (2015). The relation between science student teachers' educational use of web 2.0 technologies and their computer self-efficacy. *Journal of Baltic Science Education*, 14(1), 142-154.

Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Teaching in Education, 42*(3), 255-284.

Fahad, N. (2009). Students' attitudes and perceptions towards the effectiveness of mobile learning at King Saud University, Saudi Arabia. *The Turkish Online Journal of Educational Technology, 8*(2), 111-119. http://www.tojet.net/articles/v8i2/8210.pdf

Fairbarn, M. S., Kearns, M., & Fair, B. (2000). *Online learning and your professional development*. Applied Clinical Trials, 9(12), 50-53.

Huang, Y. M., Jeng, Y. L., & Huang, T. C. (2009). An educational mobile blogging system for supporting collaborative learning. *Educational Technology and Society, 12(*2), 163–175. https://www.j-ets.net/ets/journals/12_2/12.pdf

Gürbüz, F. (2014). Students' views on distance learning in Turkey: An example of anadolu university open education faculty. *Turkish Online Journal of Distance Education, 15*(2), 239-250. https://files.eric.ed.gov/fulltext/EJ1043114.pdf

Greenhow, C., Robelia, B., & Hughes, J. E. (2009). Learning, teaching, and scholarship in a digital age Web 2.0 and classroom research: What path should we take now?. *Educational Researcher, 38*(4), 246-259. https://doi.org/10.3102/0013189X09336671

Hammond, F. Rennie, C., & Dickson, J. (2007). Distance education for unit smoking counselors in Canada: A case report. *International Journal of Circumpolar Health, 66*(4), 284-286. https://doi.org/10.1080/22423982.2018.12016713

Herrington, A., & Herrington, J. (2001). Web-based strategies for professional induction in rural, regional and remote areas. In P.L. Jeffery (Ed.), *Proceedings of the Australian Association for Research in Education* (AARE) International Educational Research Conference. Fremantle.

Housing, D. J. (2004). *Student perceptıons of e-learnıng in South Dakota high schools.* (Unpublished doctoral dissertation). The University of South Dakota, South Dakota, America.

Huang, Y. M., Jeng, Y. L., & Huang, T. C. (2009). An educational mobile blogging system for supporting collaborative learning. *Educational Technology and Society, 12(*2), 163–175. https://www.j-ets.net/ets/journals/12_2/12.pdf

Joebagio, H., & Akhyar, M. (2018). Teachers' Perception on Digital Teaching Material Development in Social Science Education (Special issue. *Journal of Turkish Science Education*, 15, 13-21. https://www.tused.org/index.php/tused/article/view/684/586

Jonassen, D., Howland, J., Marra, R. M., & Crismond, D. (2008). *Meaningful learning with technology* (3rd ed.). Upper Saddle River, N.J. : Pearson/Merrill Prentice Hall.

Kamel Boulos, M. N., & Wheeler, S. (2007). The emerging Web 2.0 social software: an enabling suite of sociable technologies in health and health care education. *Health Information and Libraries Journal, 24*(1), 2-23. Doi: 10.1111/j.1471-1842.2007.00701.x

Karasar, Ş. (2004). Eğitimde yeni iletişim teknolojileri internet ve sanal yüksek eğitim [New communication technologies in education and virtual higher education]. *The Turkish Online Journal of Educational Technology, 3*(4), 117-125. http://tojet.net/articles/v3i4/3416.pdf

King, F. B. (2001). Perceptions of technology: A factor in distance education couse achievement?. *Journal of Educational Computing Research, 24*(4), 407- 418. https://doi.org/10.2190/VYD1-VVKK-MFG7-DRYJ

Kist, W. (2008). "I gave up my space for lent": New teachers and social networking sites. *Journal of Adolescent & Adult Literacy, 52*(3), 245-247.

Korucu, A. T., & Yücel, A. (2015). İnformation technologies teachers' ideas about dynamic web technologies use in education. *Eğitim Teknolojisi Kuram ve Uygulama, 5*(2), 126-152. https://dx.doi.org/10.17943/etku.78815

Korucu, A. T., & Karalar, H. (2017). Basic education instructors' views on web 2.0 tools. *Trakya Üniversitesi Eğitim Fakültesi Dergisi[Trakya University Journal of Social Science], 7*(2), 456-474. https://doi.org/10.24315/trkefd.304255

Lu, L., & Lei, J. (2012). Using live dual modeling to help pre-service teachers develop TPACK. *Journal of Digital Learning in Teacher Education, 29*(1), 14-22. DOI:10.1080/21532974.2012.10784699.

Lumpe, A. T., & Chambers, E. (2001). Assessing teachers' context beliefs about technology use. *Journal of Research on Technology in Education, 34*(1), 93-107. https://doi.org/10.1080/15391523.2001.10782337

Majhi, S., & Maharana, B. (2011). Familiarity of Web2. 0 and its application in learning: A case study of two Indian Universities. *International Journal of Library and Information Science*, 3(6), 120-129.

Merriam, S. B. (2015). *Nitel araştırma: Desen ve uygulama için bir rehber [Qualitative Research: A Guide to Design and Implementation]*. (S. Turan, Trans.). Ankara, Turkey: Nobel Yayıncılık [Nobel Publishing]. *(Original work published 2019)*

Miles, M, B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook. (2nd ed)*. Thousand Oaks, CA: Sage.

Mostyn, B. (1985) The Content Analysis of qualitative research data: a dynamic approach. (In Brenner, M., Brown, J., and Canter, D., Eds.), *The Research interview: uses and approaches*. London: Academic Press.

Muhirwa, J.M. (2009). Teaching and learning against all odds: a video-based study of learner-to-ınstructor ınteraction in ınternational distance education. *International Review of Research in Open and Distance Learning, 10*(4), 1-24. https://files.eric.ed.gov/fulltext/EJ861316.pdf

O'Bannon, B. W., & Britt, V. G. (2011). Creating/developing/using a wiki study guide: Effects on student achievement. *Journal of research on technology in education, 44*(4), 293-312. https://doi.org/10.1080/15391523.2012.10782592

Okumuş, O. (2019). Tarih öğretiminde sosyal medya ortamlarinin kullanimina ilişkin tarih öğretmenlerinin görüşleri. *Turkish History Education Journal*, 8(2), 499-535.

O'Malley, J., & McCraw, H. (1999). Students perceptions of distance learning, online learning, and the traditional classroom. *Online Journal of Distance Learning Administration, 2*(4). Retrieved from http://www.westga.edu/~distance/omalley24.html

Onbasili, Ü. I. (2020). The Effects of Science Teaching Practice Supported with Web 2.0 Tools on Prospective Elementary School Teachers' Self-Efficacy Beliefs. *International Journal of Progressive Education*, *16*(2), 91-110.

O'Reilly, T. (2005). *What is web 2.0: Design patterns and business models for the next generation of software*. Retrieved from http://oreilly.com/web2/archive/what-is-web-20.html

Pan, S. C., & Franklin, T. (2011). *In service teachers' self-efficacy, professional development, and Web 2.0 tools for utilization. New Horizons in Education, 59*(3), 28-40. doi: 1683-1381. https://files.eric.ed.gov/fulltext/EJ955543.pdf

Patton, M. Q. (2014). *Nitel araştırma ve değerlendirme yöntemleri [Qualitative research and evaluation methods]*. (M. Bütün, & S. Beşirdemir, Trans.). *Ankara, Turkey: Pegem Akademi [Pegem Academy]. (Original work published 2002)*

Prensky, M. 2001. *"Digital Natives, Digital Immigrants. On the Horizon 9: 1– 6.* https://doi.org/10.1108/10748120110424816.

Redecker, C., Ala-Mutka, K., Bacigalupo, M., Ferrari, A., & Punie, Y. (2009). *Learning 2.0: the ımpact of web 2.0 ınnovations on education and training in europe*. Seville: European Commission.

Rogers-Estable, M. (2014). Web 2.0 use in higher education. *European Journal of Open, Distance and eLearning,17*(2), 130-142. DOI: https://doi.org/10.2478/eurodl-2014-0024

Rowland, F., & Rubbert, I. (2001). An evaluation of the information needs and practices of part-time and distance-learning students in the context of educational and social change through lifelong learning. *Journal of Documentation, 57*(6), 741-762. https://doi.org/10.1108/EUM0000000007105

Selwyn, N. (2007). Web 2.0 applications as alternative environments for informal learning – a critical review. *Paper for OCEDKERIS expert meeting.* Session 6 – alternative learning environments in practice: using ICT to change impact and outcomes. Retrieved from http://www.oecd.org/education/ceri/39458556.pdf

Shaffer, S., Lackey, S., & Bolling, G. (2006). Blogging as a venue for nurse faculty development. *Nursing Education Perspectives, 27*(3), 126-128.

Şirin, R., & M. Tekdal (2015). Students' views on English language courses through distance education. *Gaziantep University Journal of Social Sciences, 14*(1), 323-335. https://doi.org/10.21547/jss.256783

Taşlıbeyaz, E., Karaman, S., & Göktaş, Y. (2014). Examining the experiences of teachers received in service-training through distance education. *Ege Eğitim Dergisi,15*(1), 139-160. https://dx.doi.org/10.12984/eed.19099

Tekinarslan, T. (2008). A validity and reliability study of the basic technology competencies scale for educators. *Elektronik Sosyal Bilimler Dergisi [Electronic Journal of Social Sciences], 7*(26), 186-205. http://dergipark.gov.tr/download/article-file/70066

Teo, T., Sang, G., Mei, B., & Weng., H. C. K. (2019). Investigating pre-service teachers' acceptance of Web 2.0 technologies in their future teaching: a Chinese perspective, *Interactive Learning Environments*, 27:4, 530-546. DOI: 10.1080/10494820.2018.1489290

Tyre, T. (2002). *The art of online learning*. District Administration, 38(9), 36-39.

Usal, M.R., & Albayrak, M. (2005). E-öğrenmede bilgisayar / ağ altyapısı bakımından etkili parametreler ve türkiye 'nin e-öğrenmeye hazır bulunuşluğu [Turkey's readiness for e-learning and the important computer factors at e-learning]. *The Turkish Online Journal of Educational Technology, 2*(4), 44-50. http://www.tojet.net/articles/v4i2/426.pdf

Usta, E., & Korkmaz, Ö. (2010). Pre-service teachers' computer competencies, perception of technology use and attitudes toward teaching career. *Uluslararası İnsan Bilimleri Dergisi [Journal of Human Sciences], 7(*1), 1335-1349. https://www.j-humansciences.com/ojs/index.php/IJHS/article/view/1281

Uşun, S., (2006). *Uzaktan Eğitim [Distance Education].* Ankara, Turkey: Nobel Yayıncılık [ Nobel Publishing].

Watson, J., & Ryan, J. (2007). *Keeping pace with k-12 online learning. A review of state-level policy and practice*. Retrieved from http://www.nacol.org/resources/

Williams, B. (2007). *Educator's podcast guide.* Eugene, Or.: International Society for Technology in Education.

Yaylak, E. ve İnan, S. (2018). Sosyal bilgiler öğretmenlerinin eğitimde sosyal medyanın kullanılmasına yönelik görüşlerinin incelenmesi [Investigation of Social Studies Teachers' Opinions on the Use of Social Media in Education]. *Türkiye Bilimsel Araştırmalar Dergisi [Turkish Scientific Research Journal]*, 3 (1), 1-32.

Yıldırım, A., & Şimşek, H. (2008). *Sosyal bilimlerde nitel araştırma yöntemleri (6. Baskı) [Qualitative Methods in Social Science Research]*. Ankara, Turkey: Seçkin Yayıncılık [Seçkin Publishing].

Yıldız (2004). *Öğretim teknolojileri ve materyal geliştirme [Instruction technology and material developlent]*. Konya, Turkey: Atlas Kitapevi [Atlas Bookstore].

Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Thousand Oaks, CA: Sage.