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Opinions and Experiences of Social Studies Pre-service Teachers on Web 2.0 Tools*

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Abstract

The purpose of this research is to reveal the experiences of social studies pre-service teachers regarding the web 2.0 tools they use as a Material Design lesson in Social Studies Teaching and their opinions based on these experiences. The case study design, one of the qualitative research methods, was used in the research. The study group of the research consists of seven pre-service teachers who are studying in a state university Social Studies Teaching program in the spring semester of the 2021-2022 academic year. The application stages of the research were carried out in 2-hour classes for six weeks within the scope of the Material Design in Social Studies Teaching course. The research data were collected at the end of face-to-face interviews with each pre-service teacher after the implementation phases were completed. The data obtained were analyzed by the content analysis method, and diagrams containing themes, sub-themes, and codes were created and presented with their frequencies. It was determined as a result of the research that the pre-service teachers preferred the applications chosen by them to produce content because of their features such as ease of use, the richness of content, being usable in the classroom, and being interesting. Regarding content creation processes, it was seen that they enjoyed preparing colorful designs, using applications, learning new information, and designing puzzles/games/digital stories. However, it was observed that they had difficulties because there were paid options in the applications, the language of the application was English, it was difficult to understand the use of the application, and not everyone had a computer. Pre-service teachers thought that the use of web 2.0 tools in social studies lessons would have positive effects on teachers, students, and educational environments they suggested that these tools should be used by all teachers, their usage licenses should be purchased by the Ministry of National Education or school administrations, schools and classrooms should be improved in terms of technological facilities and tools, and in-service training should be organized.

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INTRODUCTION

The concept of the web is used to describe the system that provides access to information and documents in the internet environment. In the early days, the web environment, which consisted of classical HTML codes, consisting of visual elements and texts, had a form that did not allow interaction with the user (Deperlioğlu & Köse, 2010). It was passed from Web 1.0 which is the only readable web to Web 2.0 where content can be produced and interacted as a result of the developments in Information Technologies (Korucu & Karalar, 2017). Web 2.0 is a second-generation and more personalized, interactive online platform that provides active participation, communication, collaboration, knowledge, and thought sharing among users (McLoughlin & Lee, 2007). Web 2.0 tools, which allow individuals to easily create content on the Internet and add to the created content, enable the creation of common content with the cooperation of different participants, the sharing, storage, and evaluation of this content (Altınok et al., 2017). Educational use of web 2.0 tools, which can also be used in daily life, enriches educational environments and attracts the attention of today's children who grow up with technology (Korucu & Sezer, 2016). Therefore, the use of web 2.0 technologies in daily life and education has gained great importance (Ajjan & Hartshorne, 2008). It is seen as an important learning platform today because web environments become interactive, content production is easy and can be updated quickly, and it has features such as ease of access to content in web environments (Korucu & Karalar, 2017). The advantages and ease of use offered by Web 2.0 technologies provide both educators and students with the convenience and support they need in the learning and teaching process (Avcı & Atik, 2020). Web 2.0 tools have many positive contributions to learning and teaching environments. Web 2.0 tools that make learning fun for students who grow up between school desks and technological tools (Mete & Batıbay, 2019) positively affects students' interest and motivation towards the lesson (Aslan Efe et al., 2014). According to Huang et al., (2009), web 2.0 tools support learning, encourage cooperation, increase student participation, and provide a positive and encouraging learning environment. Korucu and Yücel (2015) emphasize the important effects of web 2.0 tools such as providing permanent learning, making the education and training process more effective, facilitating the teaching and learning process, and increasing the efficiency of education and training. Web 2.0 tools in today's educational approaches where students are encouraged to be active participants in learning environments and contribute to the content also increase the socialization opportunities of students by providing the opportunity to work collaboratively in content creation and content production. In addition, it has been determined that the effective use of web 2.0 tools in the lessons contributes to the development of students' high-level thinking skills, problem-solving skills, and initiative skills (Karaman et al., 2008), communication and self-expression skills (Drexler et al., 2008). It has been also found that it increases their academic success (Hew & Cheung, 2013) and helps students to create content, thereby increasing their self-confidence (Conole & Alevizou, 2010). Gillard (2010) emphasized that most of the students have technological devices such as mobile phones and tablets and that such technological devices should be used more beneficially instead of prohibiting the use of them in learning and teaching environments.

One of the most important factors in the effective use of web 2.0 tools in educational environments is the training of teachers (Tavares et al., 2012). According to Akpınar (2003), instead of introducing teachers only to technology, teachers should be given the opportunity to develop learning-teaching activities using technology. In this context, in order to train teachers who can use the developing technologies effectively in their lessons, it is necessary to provide pre-service teachers with the knowledge and skills related to the use of technology during their education (Çağıltay et al., 2007). In today's conditions, it is important for teacher/pre-service teachers to include web 2.0 tools, which provide the opportunity to create content without requiring software skills or program installation for their use. There are many studies examining the use of web 2.0 tools in social studies teaching in line with the widespread use of Web 2.0 tools in educational

environments in recent years. In these studies, the attitudes and opinions of social studies teachers towards the use of web 2.0 tools/digital materials (Altunay, 2021; Erdoğan & Şerefli, 2021; Güleli, 2015; Kırımlı & Demirezen, 2022; Seyhan & Küçük, 2021; Taşdemir, 2021; Yaylak & İnan, 2018), the opinions and competencies of social studies pre-service teachers regarding the use of web 2.0 (Özer & Albayrak Özer, 2017; Tünkler, 2021; Tepe & Çelik, 2021), the designs of web 2.0 tools developed for social studies teaching (Ak, Erdoğan & İlhan, 2020; Beaudry et al., 2013; Bull et al., 2008; Çelik & İlhan, 2021; Çelik & Tepe, 2022; Kavak & İlhan, 2021; Keskin & İlhan; 2021), the effects of using web 2.0 technologies in social studies lessons on students (Ada & Sözen, 2021; Almalı & Yeşiltaş, 2020; Balçın & Çalışkan, 2021; Gezer & Ersoy, 2021; İneç, 2017; Pala, 2021; Torrez, 2010;) are focused on. When the studies on Web 2.0 tools are examined, it is seen that there are few studies with pre-service teachers. Despite all these studies, the number of web 2.0 tools that can be used in educational environments is increasing day by day in parallel with the improvement of technology. For this reason, there is a need for applied and up-to-date new studies that include the views of teachers and pre-service teachers on web 2.0 tools. It is very important to provide pre-service teachers, who will be the teachers of the future, with knowledge, skills and experience regarding the active use of technology in social studies teaching during their education. It is aimed to determine the experiences of social studies pre-service teachers regarding the web 2.0 tools they use as a Material Design lesson in Social Studies Teaching and their opinions based on this experience. For this purpose, answers to the following questions were sought:

1. Which applications did the social studies pre-service teachers use to prepare digital material from web 2.0 tools?
2. What are the opinions of pre-service teachers about the reasons for preferring these applications?
3. What are the opinions of social studies pre-service teachers about the process of preparing digital material using web 2.0 tools?
4. What are the opinions of social studies pre-service teachers about the use of web 2.0 tools in social studies lessons?
5. What are the recommendations of social studies pre-service teachers to their other colleagues on the use of web 2.0 tools in educational environments?

METHOD

RESEARCH DESIGN

The case study design, one of the qualitative research methods, was used in the research. Case studies that seek answers to “how”, “what” and “why” questions (Çepni, 2007) are studies in which an individual, group, environment, or process with a situation can be investigated. The holistic single case design, which is one of the case study designs, is the studies carried out with a single analysis unit such as an individual, program, and school (Yıldırım & Şimşek, 2018). In the study, the pre-service teachers in the classroom in which the application was made in line with this pattern were considered as a holistic single analysis unit.

STUDY GROUP

The study group of the research consists of seven pre-service teachers who are studying in the 3rd year of a state university Social Studies Teaching program in the spring semester of the 2021-2022 academic year and taking the Material Design in Social Studies Teaching course. Criterion sampling, one of the purposive sampling methods, was used in the selection of the study group. In purposeful sample selection, information-rich situations are selected so that more in-depth research can be conducted (Maxwell, 2018). According to Patton (2018), information-rich situations are situations where the researcher can obtain as much information as possible. The criterion sample is the study of all cases that meet a predetermined set of criteria (Yıldırım & Şimşek, 2018). The criterion for

determining the pre-service teachers constituting the study group in this study is to be taking the Material Design in Social Studies Teaching course. Pre-service teachers coded their names as Fatma, Yıldız, Kürşat, Öykü, Pamir, Tuğba, and Zeynep and they wanted their names to be mentioned in this way in the study. Table 1 shows the characteristics of the study group.

Table 1. *Features of the Working Group*

		f	*%*
Gender	Female	5	71
	Male	2	29
Self-assessment of their ability to use technological tools	Middle	2	29
	Sufficient	4	57
	Very good	1	14
Self-assessment of their ability to use technological tools	Yes	5	71
	Partially	2	29
	No	-	-
Previous use of web 2.0 tools	Yes	7	100
	No	-	-
Consideration of using web 2.0 tools when they become teachers	I will use	7	100
	I will not use	-	-

DATA COLLECTION TOOL

A semi-structured interview form was used as a data collection tool in the research. According to Patton (2018), the interview form is prepared in order to get the same type of information from different people by addressing similar issues. The interview form ensures that all questions related to the research problem are used (Yıldırım & Şimşek, 2018). The interview form was presented to the opinion of two field experts in order to ensure the internal validity of the research. Feedback was received from the field experts on the way of expression and clarity of the questions, and necessary arrangements were made on the questions according to the feedback received. In the first part of the interview form, there are questions about the personal information to define the pre-service teachers, and in the second part, there are four basic questions determined in accordance with the research purpose and complementary questions for each question.

DATA COLLECTION

In case studies, situational details are giving readers the feeling of being there (MacDonald & Walker, 1977 cited in Güçlü, 2019). The implementation stages of the research were carried out face to face with the participation of seven pre-service teachers in the first six weeks of the Material Design in Social Studies Teaching course in the spring semester of the 2021-2022 academic year. In the first three weeks, web 2.0 tools for creating presentation, visual content and assessment tools that can be used in social studies lessons were introduced using web pages. After the presentation, the questions of the pre-service teachers about the preparation of web 2.0 tools were answered.

In the first three weeks, web 2.0 tools were introduced, and in the third week, pre-service teachers were asked to choose 4 web 2.0 tools to be presented in the last week of the application and produce content suitable for the Social Studies Curriculum learning outcomes. Pre-service teachers were given two weeks for content design, and the researcher provided guidance to the pre-service teachers at every stage they needed. In the 4th and 5th weeks, examples of web 2.0 tools for social studies education were examined and evaluations were made for the effective use of these tools in the classroom. In the sixth week, which is the last week of the application, the pre-service teachers explained the preparation process of the web 2.0 tools they designed individually and introduced the web 2.0 tools. After the presentation, other pre-service teachers made evaluations about the quality and in-class use of the web 2.0 tools they watched.

The data collection process started by obtaining ethical permission from Afyon Kocatepe University Scientific Research and Publication Ethics Committee (Ethics Committee Decision dated 08.04.2022 and themed 2022/121). The research data were collected at the end of face-to-face interviews with each pre-service teacher on April 14, 2022, at the researcher's office in the Faculty of Education building, after the implementation phases were completed. According to Yıldırım and Şimşek (2018), an interview is one of the most widely used data collection methods in qualitative research. The reason for this is that they are very powerful in terms of revealing individuals' opinions, experiences, and feelings, and it is based on speech, the most common form of communication. In this respect, the interview method removes the limitations or artificiality found in tests or questionnaires based on writing or filling out.

Before starting the interview, it was stated to the pre-service teachers that their personal information would not be shared and that the data obtained during the interview would only be used for research. Permission was obtained from the pre-service teachers for voice recording during the interview, a comfortable and quiet environment was created for the pre-service teachers to express themselves comfortably, and they were informed that they could end the interview whenever they wished. Probe questions were used in order to make an in-depth analysis of the answers of the pre-service teachers. According to Patton (2018), probe questions are used to deepen the answer given to a question, increase the richness and depth of the answers, and give clues to the participant about the desired level of answer. At the end of each interview, which lasted approximately 15-20 minutes, the data collection process was concluded by asking the pre-service teachers whether they had any comments they would like to add.

DATA ANALYSIS

The audio recordings taken during the interviews were transcribed and the data were analyzed by the content analysis method. Content analysis is a process of examining the data in depth, considering the similarities in the expressions, making the codes, themes, and sub-themes meaningful, and presenting them to the reader (Yıldırım & Şimşek, 2018). Expert opinion was sought to ensure reliability in the analysis of the research data. The coding of the researcher and the field expert were compared in terms of research reliability, and the percentage of agreement was calculated as ([Agreement / (Agreement + Disagreement) x 100]).93. Reliability calculations over 70% are considered reliable for research (Miles & Huberman, 1994). The sections where there were differences of opinion were re-evaluated and a consensus was achieved and the analysis of the data was finalized. The data obtained were presented with their frequencies by creating diagrams containing themes, sub-themes, and codes, and were supported by direct quotations from the views of the pre-service teachers.

FINDINGS

Social studies pre-service teachers' views and experiences on web 2.0 tools, the applications they chose to produce content and the reasons for choosing these applications, the stages they liked and had difficulty with the content production process, and their thoughts on the use of web 2.0 tools in social studies courses, and their advice to other colleagues about the use of web 2.0 tools in lessons were evaluated.

In Tables 2 and 3, the applications that social studies pre-service teachers choose to produce content and the reasons for preferring these applications are presented.

Table 2. *The Applications Chosen by Pre-Service Teachers*

		f
Presentation and visual content creation applications	Canva	7
	Voki	2
	Pixton	1
	PictraMap	1
	Emaze	1
	Storyboard That	1
Concept/mind mapping applications	Bubbl.us	5
	Mindmeister	1
	Word Art	1
Evaluation tool creation applications	Word Wall	4
	Puzzlemaker	3
	Kahoot	2

The applications chosen by the pre-service teachers to produce content were evaluated through sub-themes named presentation and visual content creation applications, concept/mind map creation applications, and evaluation tool creation applications. Pre-service teachers used applications named Canva, Voki, Pixton, PictraMap, Emaze, and Storyboard that as presentation and visual content creation applications.

Pre-service teacher Yıldız mentioned the economics of digital materials by saying *"…If I had made the digital poster application that I organized in the Canva application by taking the cardboard and photo printouts in the classroom, it would have forced me and my students financially. I think this application is economical in terms of time and material…".* Öykü likened the presentation she prepared in the Emaze application to a virtual museum trip and said, *"Preparing a presentation with Emaze was very enjoyable, …I designed a museum of professions and aimed to show the students as a virtual museum.* She said, *"…we can make our own virtual museums with this application and use them in lessons for students who do not have the opportunity to visit museums...".* Zeynep, who created a digital character with the Voki application, used the phrase *"I chose the Voki application because I can produce content suitable for the class level and amusing without using my own voice, I had a lot of fun preparing it and introducing it to my friends.".*

Pre-service teachers used Bubble. Us, Mindmeister, and Word Art applications as concept/mind map creation applications. Pre-service teacher Öykü *"I used Bubble. Us application during distance education and I liked it very much. That's why I chose it again.*" and Kürşat stated their opinions on these applications as *"I chose the templates and themes of Mindmeister application because I find it aesthetic".*

Pre-service teachers used Word Wall, Puzzlemaker, and Kahoot applications as evaluation tool creation applications. Pre-service teacher Öykü "*Word Wall has puzzles and games. At the end of the lesson, I used it as an evaluation tool."* and Zeynep expressed their opinion by saying *"I prepared puzzles in Puzzlemaker, I found the application fun."*.

Table 3. *Opinions of Pre-Service Teachers on the Reasons for Preference These Applications They Have Chosen*

		f
Features of the application	Ease of use of the application	6
	Being too many options for application content	4
	Being able to create content suitable for the Social Studies Curriculum	3
	Having used the app before	3
	Suggestion of friends	1
	Widespread use of the application	1
Being suitable for use in the learning and teaching process	Suitable for classroom use	4
	Being interesting	4
	Being able to be used for concept teaching	3
	Being able to be used as an evaluation tool	2
	Being economical	1
	Suitable for use for topic summarization	1

The reasons why pre-service teachers prefer the applications they have chosen to produce content were evaluated over sub-themes named application's features and being suitable for use in the learning and teaching process. In the sub-theme of the application features, the pre-service teachers emphasized the ease of use, the wide choice of application contents, the ability to create content suitable for the Social Studies Curriculum, the fact that they had used the application before, the suggestions of their friends and the widespread use of the application. The opinions of the pre-service teachers on this subject are as follows:

> Tuğba, *"Because I do not trust my computer skills and there are applications that I have tried and failed to do, I preferred applications that I can use easily."*
>
> Kürşat *"I paid attention to the simple use of the application and the advanced content."*
>
> Fatma *"I aimed to design fun digital materials suitable for the Social Studies Curriculum."*

In the sub-theme of being suitable for use in the learning and teaching process, the pre-service teachers emphasized that it can be used in the classroom, that it is interesting, that it can be used for concept teaching and subject summarization, that it can be used as an evaluation tool and that it is economical. The opinions of the pre-service teachers on this subject are as follows:

> Yıldız *"The financial situation of the students may be insufficient. …Digital options can be used instead of doing activities that may force students financially."*
>
> Fatma *"I prepared questions in the form of a fun and visual contest. These questions can be used as end-of-topic evaluation tools."*
>
> Zeynep "*Colorful and visual mind maps can be used for end-of-topic summaries."*

In Table 4, the views of social studies pre-service teachers about the process of producing content using web 2.0 tools are presented.

Table 4. *Opinions of Social Studies Pre-Service Teachers About the Process of Producing Content Using Web 2.0 Tools*

		f
Features they enjoyed	Preparing colorful/enjoyable designs	6
	Being rich in application content	5
	Learning new information	5
	Being able to use applications easily	4
	Designing a puzzle/game	3
	Creating a digital story	2
	Refreshing their knowledge while preparing digital material	1
	Being able to make different designs through applications	1
	Being able to shape their ideas	1
	Gaining self-confidence	1
Features they had difficulties	Having paid options/usage restrictions in applications	7
	Usage of English as an application language	6
	Understanding application usage	4
	Not having a computer	2
	Creating content	3
	Not having sufficient technological skills	1

The views of pre-service teachers about the process of producing content using web 2.0 tools, the features they enjoyed and the features they had difficulty" were evaluated through sub-themes. Pre-service teachers emphasized preparing colorful/enjoyable designs, the applications being rich in application content, being able to use applications easily, learning new information, designing puzzles/games, and creating digital stories as features they liked. Some pre-service teachers stated that they can refresh their knowledge, make different designs through applications, shape their ideas, and gain self-confidence. The opinions of the pre-service teachers on this subject are as follows:

> Kürşat *"The stage I enjoyed most was preparing a game. I went back to my childhood… While I was preparing games, I also learned and improved myself in producing digital content."*
>
> Pamir *"It was fun to prepare digital materials. You're struggling, getting a little nervous, and having fun... I listened to music while I was preparing it. Normally, I can't work by listening to music when I pick up a book or a notebook, but I listened to music while creating digital content, I was able to work with pleasure and rest my mind."*
>
> Zeynep *"…I like that I can shape my ideas. I had a little difficulty producing these contents, …I did it by watching it on YouTube. It encouraged me to use computers and design digital materials, and I gained self-confidence."*

The pre-service teachers emphasized having paid options and usage restrictions in applications, usage of English as an application language, understanding application usage, and not having a computer as the stages they have difficulty with. Some pre-service teachers stated that they had difficulties in creating content suitable for the level for use in applications and not having sufficient technological skills. The opinions of the pre-service teachers on this subject are as follows:

> Yıldız *"I had a language problem because the application language was not Turkish, my classmates had similar problems. We found a solution by activating the translate to Turkish button. However, our options were limited because there were paid parts in the applications, it would be very expensive if we wanted to buy it."*
>
> Öykü *"In order to be able to use the programs easily, I first watched Turkish videos on how they were made. I tried to use the application by stopping and using the application and continuing to watch the video. … I prepared a digital story, but I couldn't take a*

screen recording. When I saved it, the name of the application appeared on the designs I made. This reduced the visual quality of my digital stories and made them unreadable."

Pamir *"Not having a personal computer made it difficult for me because I had to request my friends… It was a bit of a challenge. "*

Fatma *"I had difficulties in preparing dialogues and questions suitable for the age of the students, especially in preparing the answers to the multiple-choice questions."*

In Table 5, the views of social studies pre-service teachers on the use of web 2.0 tools in social studies lessons are presented.

Table 5. *Opinions of Social Studies Pre-Service Teachers on the Use of Web 2.0 Tools in Social Studies Lessons*

		f
Effects on teachers	Making it easier for teachers	5
	Supporting oral expression	4
	Being economical	3
	Demonstrating efficient use of technology to students	2
	Teachers' self-development in the digital field	2
	Teachers discovering new apps	2
	Being able to be used as an evaluation tool	2
	The preparation process is challenging for teachers	1
	The preparation process is enjoyable for teachers	1
	The necessity for teachers to have technological opportunities	1
Effects on students	Being interesting from the perspective of students	7
	Providing permanent learning	6
	Facilitating learning	6
	Students perceiving it as a game	5
	Students' involvement with technology	4
	Embodying abstract thinking	3
	Increasing academic success	3
	Possibility to harm eye health because they are digital tools.	1
Effects on the educational environment	Making the learning and teaching environment fun	7
	Increasing in-class interaction	4
	The possibility of difficulty in classroom management	2
	The necessity for classrooms and schools to have technological facilities	1
	The possibility of using the preparation process as an in-class application	1
	Seeing easily as it is projected onto the screen	1

The views of pre-service teachers on the use of web 2.0 tools in social studies lessons were evaluated over the sub-themes of their effects on teachers, their effects on students, and their effects on the educational environment. Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on teachers that making it easier for teachers, supporting oral expression, being economical, demonstrating efficient use of technology to students, teachers' self-development in the digital field, teachers discovering new apps, being able to be used as an evaluation tool, the preparation process being challenging for teachers, the preparation process being enjoyable for teachers, the necessity for teachers to have technological opportunities.

Fatma *"When teachers look at the videos explaining their use of the web 2.0 tool, there are different suggestions on the side of them in the explore section. They can see different web 2.0 tools…"*

> Yıldız *"It can be beneficial for teachers in terms of classroom management. In a very active classroom, students can be interested in the lesson, the teacher gets less tired. Also, in terms of material, cardboard, etc. It's very expensive, but we can prepare what we do here for free. While we spend at least 100-200 TL and lose time, we can do digital applications in less time and our money stays in our pocket."*
>
> Kürşat *"For teachers, the lessons become more instructive with the use of web 2.0 tools. …You cannot ask always 'Do you understand?' to each student, but to give an example from the test, you can say, 'look, you made a mistake here, this is the right thing' since the student's mistakes in the test fall into your system."*

After describing the pre-service teacher Öykü the web 2.0 tool as *"It is something that should be used if we want to get more efficiency from our lessons as a teacher",* she used these expressions, *"Obviously, the web 2.0 tool preparation stage is a bit of a challenging process for teachers. We design these tools for a long time, we try to understand the use of the programs, and we spend time. Its preparation and use in lessons can be a bit difficult and time-consuming for the teacher.".* Pre-service teacher Pamir said, *"Now, children grow up in the digital age, they get computers and phones in their hands at a young age. We should shape our course content according to our students."* He has voiced his opinion by saying, *"As I listen to music in the background while I work, I both produce a beautiful product and relax my mind".*

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on students that being interesting from the perspective of students, providing permanent learning, facilitating learning, students perceiving it as a game, students' involvement with technology, embodying abstract thinking, increasing academic success, possibility to harm eye health because they are digital tools. The opinions of the pre-service teachers on this subject are as follows:

> Fatma *"…We can show how we can use technology more efficiently. We can adopt the view that technology is not just games or social media."*
>
> Yıldız *"…Since students cannot think abstractly, these tools embody abstract thinking and facilitate learning. For example, they cannot understand latitude and longitude with a simple expression, they understand better by imagining it when they show it on Google earth…"*
>
> Kürşat *"Let's think of two teachers, let's think of ourselves as students. A teacher just talks about the subject in the lesson. But the other teacher turns on the smart board and plays games. Which course would we like to attend more? The second teacher's classroom is more interactive, and happier. They love the teacher and the lesson because loving the lesson is about loving the teacher of the lesson. Students love teachers who use technology."*
>
> Tuğba *"Students at secondary school level learn more easily with visuals. Therefore, the lessons are more efficient and interactive with the possibility of using visuals. If I were a student, I couldn't get enough of looking at it, I think it's very impressive, we use very nice applications and visuals. If I were a student, I would listen to the lecture with pleasure."*

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on the educational environment that making the learning and teaching environment fun, increasing in-class interaction, the possibility of difficulty in classroom management, and the necessity for classrooms and schools to have technological facilities, the possibility of using the preparation process as an in-class application, seeing easily as it is projected onto the screen. The opinions of the pre-service teachers on this subject are as follows:

Zeynep *"If we use these tools, we can make our lessons more fun and more active. It can be even better if we increase the academic success in our classes, the lessons are fun, and we ensure the participation of all students in the activities."*

Tuğba *"I would be happy. During my studentship, our teachers did not make such practices. They were just telling themselves and the lessons were bad for me, I couldn't understand much. Since my visual memory is better, I would like to do lessons with such activities. My other friends would think like me, and if we were educated this way, our classroom would be open to learning."*

Öykü *"It has a positive effect on the class and attracts students' attention. It makes the lesson more efficient. In particular, children learn while having fun, they think that the content we have prepared is actually a game, but we teach them when they think it is a game, learning happens with such a secret. So, it can be useful for the classroom as well."*

Pre-service teachers Tuğba said *"…I think it has more advantages, but it can provide a disadvantage in classroom management. If the students get bored, they can talk among themselves."* and Pamir said *"Maybe the teacher just prepared the content without knowing the application in detail. When there is an undesired event on his/her computer or in the application at that moment, he/she may not be able to solve it and they may not be able to carry out the lesson adequately with applications"*. They stated that it may cause problems in classroom management. Öykü also said, *"Teachers, schools, and classrooms should have sufficient technological tools and facilities. Let's suppose we are assigned to a village school, problems may arise when there are no facilities such as internet, computer, projector, smart board."* and stated that the technological facilities of the schools should be sufficient.

In Table 6, recommendations of social studies pre-service teachers to their colleagues on the use of web 2.0 tools in educational environments are presented.

Table 6. *Recommendations of Social Studies Pre-Service Teachers to Their Colleagues on the Use of Web 2.0 Tools in Educational Environments*

		f
Recommendations for teachers	It should be used to increase efficiency in lessons.	5
	It should be used to activate the student in the lessons.	3
	Support should be obtained from experts/internet videos.	3
	It should be used by all teachers.	2
	Teachers with insufficient computer skills should work on applications.	2
	Different applications should be continued to try/research.	2
	It should be used to keep up with the age.	2
	Tools suitable for practice and lectures should be preferred in the lessons.	2
	It should be used to provide professional development	1
	It should be used because it is economical.	1
	It should be used gamified.	1
	It should be used because it attracts students' attention.	1
Recommendations for administration	Application licenses should be purchased by MEB/School administrations.	7
	Technological facilities and tools should be available in schools/classrooms.	4
	Informatics classes should be created to be used in applications	2
	There should be Turkish applications with unlimited use in EBA	2
	In-service training should be given	2
	Contents produced with web 2.0 tools should be displayed on school walls	1
	Students should be supported to have technological tools	1

The recommendations of the pre-service teachers to their colleagues on the use of web 2.0 tools in educational environments were evaluated over the sub-themes of recommendations for

teachers and recommendations for administration. Pre-service teachers emphasized about recommendations of teachers using web 2.0 tools on the educational environment that it should be used to increase efficiency in lessons and activate the student in the lessons, support should be obtained from experts/internet videos, it should be used by all teachers, teachers with insufficient computer skills should work on applications, different applications should be continued to try/research, it should be used to keep up with the age, and tools suitable for practice and lecture should be preferred in the lessons. Some pre-service teachers emphasized that it should be used to provide professional development, it should be used because it is economical, it should be used gamified, and it should be used because it attracts students' attention. The opinions of the pre-service teachers on this subject are as follows:

> Fatma *"I can recommend my colleagues who do not have sufficient technology usage skills to work on applications. There are lots of videos on Youtube. They can learn by watching them or get help from people who know."*
>
> Kürşat *"I saw it for the first time, learned it and it was too late. I'd say that use it before it's too late."*
>
> Öykü *"I wish our teachers would give such lectures; we would listen to the lessons without getting bored. Teachers in different branches should definitely use it. I think that if a math teacher uses it, the success of the course will increase a lot."*
>
> Pamir *"When a teacher asks for help, he/she may think "Will I seem like a bad teacher", or when someone gets help as a pre-service teacher, he/she can think "Will I seem like I can't". Let everyone use Web 2.0 tools and get help when needed. I recommend everyone to get help without perceiving this as a personal or professional inadequacy. "*

Pre-service teachers emphasized about recommendations of administration using web 2.0 tools on the educational environment that application licenses should be purchased by Ministry of Education/school administrations, technological facilities and tools should be available in schools/classrooms, and informatics classes should be created to be used in applications, there should be Turkish applications with unlimited use in EBA, students should be supported to have technological tools, contents produced with web 2.0 tools should be displayed on school walls, and in-service training should be given. The opinions of the pre-service teachers on this subject are as follows:

> Fatma *"Technological facilities may be insufficient in some schools, and the availability of technological tools in every classroom can be expanded. In schools with better conditions, such courses can be provided in computer and informatics classes."*
>
> Yıldız *"I volunteered at the Ahbap platform, we were using Canva for free and we could do anything, it was great. If school administrations buy programs like this, teachers can produce more material."*
>
> Öykü "*…For example, while using some applications, it gives the right to produce a maximum of two content, after which it becomes paid. We need to use it more when we become teachers, it would be more beneficial if our administrators could buy it."*
>
> Tuğba *"... There should be more material opportunities in the classrooms. Classes such as music class, science class, and art class can be built. If there is a technology class, the Kahoot application can be used with tablets… It would be more advantageous if there were no usage restrictions when accessing these applications from the school or the internet connection in the Faculties of Education."*

DISCUSSION, CONCLUSION AND IMPLICATIONS

In this research, which aims to determine the opinions and experiences of social studies pre-service teachers towards web 2.0 tools, the applications they chose to produce content and the reasons for choosing these applications, the stages they like and have difficulty in producing content, their thoughts on the use of web 2.0 tools in social studies courses and their recommendations to other colleagues about the use of web 2.0 tools in classes were evaluated from the point of view of the pre-service teachers constituting the study group. This research is limited to the opinions of social studies pre-service teachers, who constitute the study group, about web 2.0 tools.

Pre-service teachers created a presentation and visual content, concept/mind map, and evaluation tool with the web 2.0 applications they chose. They used applications Canva, Voki, Pixton, Pictramap, Emaze, and Storyboard That to create a presentation and visual content; Bubble.us, Mindmeister, and Word Art to create a concept/mind map, and Word Wall, Puzzlemaker, and Kahoot to create an evaluation tool. Tatlı et al., (2016) state that pre-service teachers like the applications Powton, Quiz Maker, and Edraw Max the most and they think to use them in their professional life, while Avcı and Atik (2020) state that teachers use web 2.0 tools LearningApps, Quiver, and Kahoot. Timur et al. (2020) states that some teachers actively use social media applications as web 2.0 tools during their university education and benefit from these tools when they start their professional life, while some teachers have the opportunity to use different applications thanks to the web 2.0 tool lessons they took from the university. Horzum (2010) and Timur et al. (2020) concluded that teachers; Kıyıcı (2010), Baltacı Göktalay and Özdilek (2010), Korucu and Çakır (2014) concluded that pre-service teachers actively use social networking, video sharing, and instant messaging sites. Çelik (2020) concluded that the applications that pre-service teachers can learn and integrate into the social studies course are Quizizz, Powtoon, Powerpoint, Mowi maker, Google Classroom, Toondoo, Classdojo, Canva and Flipquiz. According to Baltacı Göktalay and Özdilek (2010), pre-service teachers are willing to use social networks, video sharing sites, and instant messaging applications in education. Arabacıoğlu and Dursun (2015) state that although pre-service teachers have knowledge about web 2.0 tools, they do not have enough information about how to use them in education. Other studies in the literature also support this finding (Efe, 2015; Dağhan et al., 2015; Eren et al., 2015; Fırat & Köksal, 2017; Tünkler, 2021).

The pre-service teachers explained the reasons for preference for the applications they chose to produce content, based on the application features and usability in the learning-teaching process. They emphasized about applications as reasons for preference that it is easy to use, their content has many options, it can create content suitable for the Social Studies Curriculum, it can be used in the classroom, it is interesting, it can be used as a concept teaching, subject summarizing, and evaluation tool, and it is economical. Avcı and Atik (2020) state that teachers prefer web 2.0 tools that are easy to use and suitable for effective material development. According to Tatlı et al. (2016), pre-service teachers preferred web 2.0 tools because they enable easy and effective material development. Özer and Albayrak Özer (2017) concluded that pre-service teachers thought of using web 2.0 tools that support individualized education and provide collaborative and social environments when they start their professional life.

Pre-service teachers emphasized about the features that they like in the process of producing content using web 2.0 tools that preparing colorful/enjoyable designs, the richness of applications in terms of content, ease of use, creating puzzles/games/digital stories, and learning new information, shaping their ideas, and gaining self-confidence. It is possible for teachers and pre-service teachers to find information on the use of web 2.0 tools, which are easy-to-learn and user-friendly applications, in sharing areas such as YouTube. Pre-service teachers' perceptions of the usefulness of Web 2.0 technologies are a strong indicator of their intention to use Web 2.0 tools to support student learning in their classrooms when they become teachers (Sadaf et al., 2013). It is possible for

teachers who are competent in the technological field to create a successful education process by using their pedagogical knowledge and knowledge about the field (Avcı & Atik, 2020). Nelson and Hawk (2020) state that making pre-service teachers believe that technology is beneficial in the education process will save pre-service teachers from the simplification process of only showing a PowerPoint presentation and will affect their professional development. There are research results that show that training on the use of Web 2.0 tools creates a change in the knowledge and skills of teacher candidates (Gürsoy and Göksün, 2019; Çelik, 2020; İzgi Onbaşılı, 2020). Providing pre-service teachers with technologically rich experiences with web 2.0 tools in pre-service teacher education programs can encourage the integration of these technologies into the real classroom environment (Coutinho, 2008).

The pre-service teachers emphasized about the features that pre-service teachers have difficulty in the content production process that having paid options and usage restrictions in applications, usage of English as an application language, understanding application usage and not having a computer, being able to produce content/questions to use in applications and not having sufficient technological skills. It has been determined that some of the social studies pre-service teachers have difficulties in content production processes due to their limited technological opportunities and they cannot allocate enough time to the content production process. In their research, Tünkler (2021) concluded that social studies teacher candidates have deficiencies in using computers, most of the web 2.0 tools used do not have Turkish language support, they obliged to purchase a payment to tools for using, and they encounter problems such as the inability to export the created content. Gürsoy and Göksün (2019) also state that pre-service teachers have difficulties in printing the content they have created, character limits, inadequacy in technology, and the interface being in English. In other studies on the subject, language problems in applications (İzgi Onbaşılı, 2020; Tatlı et al., 2019,), access to all features in applications with paid memberships (Ünal and Uzun, 2019) and lack of information about these technologies (Pritchett et al., 2013) It is stated among the situations that negatively affect the use of web 2.0 tools. In the study of Erdoğan and Şerefli (2021), in which they examined the effect of personal experiences of social studies teachers on the use of technology in the teaching process, it is emphasized that social studies teachers' having limited technological opportunities in their learning processes negatively affects their technology use skills. In the studies conducted by Şad and Nalçacı (2015) and Saygıner (2016), it was concluded that pre-service teachers who have a computer have higher technological competence.

The pre-service teachers explained their views on the use of web 2.0 tools in social studies courses through its effects on teachers and students and the educational environment. Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on teachers that making it easier for teachers, supporting oral expression, being economical compared to other materials, demonstrating efficient use of technology to students, and teachers' self-development in the digital field, teachers discovering new applications in the web 2.0 tool design process, being able to be used as an evaluation tool, the necessity for teachers to have technological opportunities. Korucu and Yücel (2015) stated that web 2.0 tools have important effects such as increasing permanent learning, making the education process more effective, facilitating concept teaching, and increasing efficiency in education and training. While Özer and Albayrak Özer (2017) stated that pre-service teachers think that the use of web 2.0 applications will save time and facilitate the education process, Efe (2014), Fırat, and Köksal (2017) have concluded that pre-service teachers' tendencies towards the use of web 2.0 tools in education are weak. In order to ensure that teachers can effectively use the new elements of developing technology in their lessons (Kaya & Yazıcı, 2019), they need to gain extensive experience in the use of technology in social studies teaching in the lessons they have taken during their education (Shin et al., 2019). In the study conducted by Vannatta and Nancy (2014), it was determined that teachers who improve themselves in the use of technology in their daily life and who are willing to learn how to use technology are more likely to use technology

in the classroom. Ersoy and Bozkurt (2015) also state that teachers can improve their technology use skills in education with their individual interest in technology and can positively affect their colleagues.

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on students that being interesting from the perspective of students, providing permanent and easy learning, students perceiving it as a game, students' involvement with technology, embodying abstract thinking, increasing academic success. The importance of today's students, whom Prensky (2001) called digital natives, acquiring the culture of learning technology in safe and ethical ways and using it as a production tool is increasing day by day (Korucu & Karalar, 2017). The positive aspects of using technology in learning environments for students are emphasized in the literature. It contributes positively to increasing students' academic success and motivation (Almalı & Yeşiltaş, 2020; Bolatlı & Korucu, 2018; Çoklar, 2012; Holcomb & Beal, 2010; Jena et al., 2018; Spiezia, 2010), creating a perception of self-confidence and competence (Hefner, 2004), ensuring student participation, increasing the attractiveness of students to the subject, improving students' research skills (Gülbahar & Güven, 2008), developing critical thinking, problem-solving, and communication skills (Chai & Kong, 2017), improving interpretation skills (Newton & Rogers, 2003) raising individuals who use information effectively by gaining the skills required by the information age (Deperlioğlu & Köse, 2010). It has positive contributions in the process of recognizing misconceptions (Simpson, 2010), meeting individual differences (Norton & Hathaway, 2008), and developing students' self-concept (Sivin Kachala & Bialo, 2000). Faizi, Chiheb, and El Afia (2015) stated that Web 2.0 applications offer many educational advantages for students, thus contributing to more learning opportunities, and stated that online tools can provide more opportunities to go beyond traditional presentation formats and develop student-centered personalized learning environments.

Pre-service teachers emphasized about effects of using web 2.0 tools in social studies lessons on the educational environment that making the learning and teaching environment fun, increasing in-class interaction, and the possibility of using the preparation process as an in-class application, seeing easily as it is projected onto the screen. Palaigeorgiou & Grammatikopoulou (2016) state that web 2.0 learning activities put the student at the center of the learning process and increase trust and communication between students and teachers. Tünkler (2021), in his research, concluded that social studies teacher candidates can prepare web 2.0 materials thanks to the theoretical and practical training they receive on the use of web 2.0 tools, and that they are aware of the effect of these materials on learning. The use of new technologies in educational environments with Web 2.0 applications offers alternative learning environments to traditional classroom learning environments (Genç, 2010, cited in Yazıcı et al., 2021). In the study conducted by Holcomb and Beal (2010), it was revealed that web 2.0 tools used effectively by teachers in social studies education had a positive effect on increasing students' academic success, interest, curiosity and creativity in lessons. Today, developments in information and communication technologies have brought about the change in teacher and student profiles, and digital competence and digital literacy as a 21st-century teacher and student competencies have become among the concepts that are frequently emphasized (Orhan Göksün & Aşkım Kurt, 2018). This situation has revealed that the use of technology in education has increased, and it is necessary to use technology consciously in the classrooms. It is thought that the educational environments of future generations will be different from today's educational environments. Educational environments are affected by technological developments as well as teachers and students. The quality of educational environments is reshaped depending on the development of teacher and student qualifications (Çelik, 2020).

Pre-service teachers explained their advice to their colleagues on the use of web 2.0 tools in educational environments, based on recommendations for teachers and administration. Pre-service teachers emphasized about recommendations of teachers using web 2.0 tools on the educational environment that it should be used to increase efficiency in lessons and activate the student in the

lessons, support should be obtained from experts/internet videos, it should be used by all teachers, teachers with insufficient computer skills should work on applications, different applications should be continued to try/research, it should be used to keep up with the age, and tools suitable for practice and lecture should be preferred in the lessons, it should be used to provide professional development, it should be used because it is economical, it should be used gamified, and it should be used because it attracts students' attention. Professional development of teachers is one of the most important factors in order to use education and technology together (Lawless & Pellegriono, 2007; Liu, 2013). However, it is emphasized that pre-service teachers are not sufficiently equipped to acquire more theoretical knowledge and skills about technology during their education and how they can use technology in their own fields (Öksüz et al., 2009). Bolick (2017), on the other hand, emphasizes that the speed of technological development is higher than the speed of technology adoption and use in educational environments, and states that this situation causes social studies teachers to not be able to use technology according to the expectations of the age. In this sense, it is necessary for pre-service teachers to gain up-to-date knowledge, skills, and positive attitudes about the efficient and effective use of technology during their education, and to make practices in this direction. According to Önal (2018), 21st-century teachers need to have the skills to use information and communication technologies in the learning and teaching process as well as their digital competencies in order to raise qualified individuals in the future. Considering that the teaching profession is a professional occupation that requires content knowledge, academic work, professional formation, and technology skills (Erden, 1998), it is expected that newly trained young teachers will be more self-sacrificing in the use of technology in educational environments. The use of technology by teachers in educational environments will contribute positively to the education system (Jonassen & Reeves, 1996; Means, 1994), the use of web 2.0 tools in classrooms will become increasingly widespread (O'Connor Petruso, 2010) and it will have positive effects on students' motivation and cognitive development (Heafner, 2004) is indicated. For this reason, teachers should be supported and trained in using web 2.0 tools. Supporting teachers in the use of technology in lessons through in-service training will be beneficial in creating more effective educational environments for Alpha generation students, who have increasingly different expectations and desires (Avcı & Atik, 2020). Prensky (2001, 1) summarizes this situation by saying that "*Our students have changed radically. Today's students are no longer what our education system designed for the teacher*".

In line with the results of the research, the following suggestions can be made:

- Academicians, teachers, and pre-service teachers can access web 2.0 tools whose usage licenses have been purchased on the EBA application.
- Course contents can be created so that pre-service teachers can gain knowledge and skills for the effective use of web 2.0 tools during their education.
- Necessary technological devices can be provided by making necessary technological arrangements in schools and classrooms, and internet connections in schools can be improved.
- New studies can be conducted to take the opinions of teachers and students on the usability of web 2.0 tools in social studies teaching.

REFERENCES

Ada, S., & Sözen, E. (2021). Sosyal bilgiler dersinde kavram karikatürü kullanımının öğrenci başarısına etkisi. *International Journal of Geography and Geography Education*, *44*, 161-175. https://doi.org/10.32003/igge.908348

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

Ak, M. M., Erdoğan, M. F., & İlhan, G. O. (2020). Görsel bir öğretim materyali olarak dijital çizgi roman tasarımı: Gezdim, Gördüm, Öğrettim. *Journal of History School*, *47*, 2458-2484. http://dx.doi.org/10.29228/joh.44172

Akpınar, Y. (2003). Öğretmenlerin yeni bilgi teknolojileri kullanımında yükseköğretimin etkisi: İstanbul okulları örneği. *The Turkish Online Journal of Educational Technology, 2*(2), 79-96.

Almalı, H., & Yeşiltaş, E. (2020). Sosyal bilgiler eğitiminde coğrafya konularının web 2.0 teknolojileri kullanılarak öğretiminin öğrencilerin akademik başarı ve tutumlarına etkisi. *Türkiye Bilimsel Araştırmalar Dergisi*, *5*(2), 64-81.

Altınok, S., Yükseltürk, E., & Üçgül, M. (2017). Web 2.0 eğitimine yönelik gerçekleştirilen bilimsel bir etkinliğin değerlendirilmesi: Katılımcı görüşleri. *Journal of Instructional Technologies & Teacher Education, 6*(1), 1-8.

Altunay, F. (2021). Sosyal bilgiler öğretmen adaylarının eğitsel sosyal ağ kullanım öz-yeterlik düzeylerinin incelenmesi. *Uluslararası Eğitim ve Değerler Sempozyumu V*, 674-681, Bodrum.

Arabacıoğlu, T., & Dursun, F. (2015). Öğretmen adaylarının web pedagojik içerik bilgisi algı düzeylerinin incelenmesi. *Kastamonu Eğitim Dergisi*, *23*(1), 197-210.

Aslan Efe H., Hark Söylemez, N., Oral, B., & Efe, R. (2014). Ortaöğretim fen ve matematik alanları öğretmen adaylarının web 2.0 kullanım sıklıkları. *Electronic Journal of Education Sciences*, *3*(5), 31-42.

Avcı, F., & Atik, H. (2020). Okul öncesi ve sınıf öğretmenlerinin "Web 2.0 araçları" kavramına yönelik metaforik algıları ve görüşleri. *Nitel Sosyal Bilimler*, *2*(2), 142-165. https://doi.org/10.47105/nsb.800117

Balçın, K., & Çalışkan, H. (2021). Sosyal bilgiler dersinde kullanılan web 2.0 araçlarının ortaokul öğrencilerinin çevresel duyarlılıklarına etkisi. *Journal of Interdisciplinary Education: Theory and Practice*, *3*(2), 128-141. https://doi.org/10.47157/jietp.975275

Baltacı Göktalay, S., & Özdilek, Z. (2010). Pre-service teachers' perceptions about web 2.0 technologies. *Procedia-Social and Behavioral Sciences*, *2*(2), 4737-4741.

Beaudry, C., McNeil, S., White, C., & Miller, A. (2013). Digitizing History: Integrating Technology and Web 2.0 Tools in Social Studies Classrooms. *Society for Information Technology & Teacher Education International Conference*, 3033-3035. Association for the Advancement of Computing in Education (AACE). https://www.learntechlib.org/primary/p/48558/

Bolatlı, Z., & Korucu, A. T. (2018). Secondary school students' feedback on course processing and collaborative learning with Web 2.0 tools-supported STEM activities. *Bartın Üniversitesi Eğitim Fakültesi Dergisi*, *7*(2), 456-478. https://doi.org/10.14686/buefad.358488

Bolick, C. M. (2017). The diffusion of technology into the social studies. M. Manfra & C. M. Bolick (Eds.), *The wiley handbook of social studies research* in (pp.499-517). Wiley-Blackwell.

Bull, G., Hammond, T., & Ferster, B. (2008). Developing web 2.0 tools for support of historical inquiry in socila studies. *Computers in the Schools*, *25*(3-4), 275-287.

Chai, C. S., & Kong, S. C. (2017). Professional learning for 21st century education. *Journal of Computers in Education*, *4*(1), 1-4. https://doi.org/10.1007/s40692-016-0069-y

Conole, G., & Alevizou, P. (2010). A literature review of the use of web 2.0 tools in higher education. *A report commissioned by the Higher Education Academy*. http://core.ac.uk/download/pdf/5162.pdf

Coutinho, C. P. (2008). Web 2.0 tools in pre-service teacher education programs: An example from Portugal. D. Remenyi (Ed.). *The proceedings of the 7th European conference on e-learning* in (pp. 239-245). UK: Academic Publishing Limited.

Çağıltay, K., Yıldırım, S., Aslan, İ., Gök, A., Gürel, G., Karakuş, Saltan, F., Uzun, E., Ülgen, E., & Yıldız, İ. (2007). *Öğretim teknolojilerinin üniversitede kullanımına yönelik alışkanlıklar ve beklentiler: Betimleyici bir çalışma*. IX. Akademik Bilişim Konferansı, 209-216, Kütahya.

Çelik, K., & İlhan, G. O. (2021). Çocuk haklarına yönelik eğitici çizgi roman: ''Sadece Biriyim''. *Türkiye Eğitim Dergisi*, 6(1), 262-279.

Çelik, T. (2020). Dijital çağda sosyal bilgiler öğretmeni yetiştirme: Bir eylem araştırması. *Pamukkale Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 38, 211-229. https://doi.org/10.30794/pausbed.541913

Çelik, T., & Tepe, T. (2022). Sanal öğrenme ortamlarında sosyal bilgilerde dijital uygulamalar ile biçimsel değerlendirme tasarımları. *Muallim Rıfat Eğitim Fakültesi Dergisi*, 4(1), 22-43.

Çepni, S. (2007). *Araştırma ve proje çalışmalarına giriş.* Celepler.

Çoklar, A. N. (2012). Evaluations of students on facebook as an educational environment. *Online Submission. 3*(2), 42-53.

Dağhan, G., Kibar, P. N., Çetin, N. M., Telli, E., & Akkoyunlu, B. (2015). Öğretmen adaylarının sosyal medya destekli bilimsel iletişimi kullanmaları üzerine nitel bir çalışma. *Türk Kütüphaneciliği*, *29*(2), 258-274.

Deperlioğlu, Ö., & Köse, U. (2010). *Web 2.0 teknolojilerinin eğitim üzerindeki etkileri ve örnek bir öğrenme yaşantısı*. XII. Akademik Bilişim Konferansı, 337-342, Muğla.

Drexler, W., Baralt, A., & Dawson, K. (2008). The teach Web 2.0 consortium: A tool to promote educational social networking and Web 2.0 use among educators. *Educational Media International*, *45*(4), 271-283.

Efe, H. A. (2015). The relation between science student teachers' educational use of web 2.0 technologies and their computer selfefficacy. *Journal of Baltic Science Education*, 14(1), 142-154. https://doi.org/10.33225/jbse/15.14.142

Erden, M. (1998), *Öğretmenlik mesleğine giriş*. Alkım Publications.

Erdoğan, E. & Şerefli, B. (2021). Sosyal bilgiler öğretiminde teknoloji kullanımı: beş öğretmenin yolculuğu. *Journal of Qualitative Research in Education*, *27*, 232-256. https://doi.org/10.14689/enad.27.11

Eren, E., Avcı, Z. Y., & Kapucu, M. S. (2015). Pre-service teachers' competencies and perceptions of necessity about practical tools for content development. *International Journal of Instruction*, *8*(1), 91-104. https://doi.org/10.12973/iji.2015.817a

Ersoy, A., & Bozkurt, M. (2015). Understanding an elementary school teachers' journey of using technology in the classroom from sand table to ınteractive whiteboard. *International Electronic Journal of Elementary Education, 8*(1), 1-20.

Faizi R., Chiheb R. & El Afia A. (2015). Students' perceptions towards using web 2.0 technologies in education. International Journal of Emerging Technologies in Learning (iJET), *10*(6) 32-36 http://dx.doi.org/10.3991/ijet.v10i6.4858.

Fırat, E. A., & Köksal, M. S. (2017). The relationship between use of Web 2.0 tools by prospective science teachers and their biotechnology literacy. *Computers in Human Behavior*, *70*, 44-50. https://doi.org/10.1016/j.chb.2016.12.067

Gezer, U., & Ersoy, A. (2021). Sosyal bilgiler dersinde mobil uygulamalara dayalı etkinliklerin akademik başarı, eleştirel düşünme becerisi ve motivasyon üzerine etkisi. *Anadolu Journal of Educational Sciences International*, 11(2), 790-825. https://doi.org/10.18039/ajesi.921684

Gillard, C. (2010). Dumb‘ phones, smartlessons. *Harvard Education Letter, 26*(4). http://www.hepg.org/hel/article/474

Gürsoy, G., & Göksün, D. O. (2019). The experiences of pre-service science teachers in educational content development using web 2.0 tools. *Contemporary Educational Technology, 10* (4), 338-357. https://doi.org/10.30935/cet.634168

Gülbahar, Y., & Güven, I. (2008). A survey on ICT usage and the perceptions of social studies teachers in Turkey. *Journal of Educational Technology & Society*, *11*(3), 37-51.

Güçlü, İ. (2019). *Sosyal bilimlerde nitel araştırma yöntemleri teknik, yaklaşım, uygulama*. Nobel.

Güleli, R. (2015). *Sosyal bilgiler öğretmenlerinin bilgi ve iletişim teknolojileri destekli öğretim materyallerini kullanımına ilişkin tutumları (Çanakkale ili örneği)*. (Unpublished master's thesis), Pamukkale Üniversitesi, Denizli.

Heafner, T. (2004). Using Technology to Motivate Students to Learn Social Studies. Contemporary Issues in Technology and *Teacher Education, 4*(1), 42-53.

Hew, K. F., & Cheung, W. S. (2013). Use of web 2.0 technologies in K-12 and higher education: The search for evidence-based practice. *Educational Research Review*, *9*, 47-64.

Holcomb, L. B, & Beal, C. M. (2010). Capitalizing on Web 2.0 in the social studies context. *TechTrends*, 54(4), 28-33.

Horzum, M. B. (2010). Öğretmenlerin Web 2.0 araçlarından haberdarlığı, kullanım sıklıkları ve amaçlarının çeşitli değişkenler açısından incelenmesi. *Uluslararası İnsan Bilimleri Dergisi, 7*(1), 603-634.

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.

Jena, A. K., Bhattacharjee, S., Gupta, S., Das, J., & Debnath, R. (2018). Exploring the effects of web 2.0 technology on ındividual and collaborative learning performance in relation to self-regulation of learners. *i-Manager's Journal on School Educational Technology*, *13*(4), 20.

İneç, Z. F. (2017). *Sosyal bilgiler dersinde geo-medya destekli otantik öğrenme ortamının öğrenmeye etkisi*. (Yayınlanmamış doktora tezi). Erzincan Üniversitesi, Erzincan.

İzgi Onbaşılı, Ü. (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. https://doi.org/10.29329/ijpe.2020.241.7

Jonassen, D. H., & Reeves, T. C. (1996). Learning with technology: Using computers as cognitive tools. *Handbook of research for educational communications and technology* (pp. 693-719). Macmillan.

Karaman, S., Yıldırım, S., & Kaban, A. (2008). Öğrenme 2.0 yaygınlaşıyor: Web 2.0 uygulamalarının eğitimde kullanımına ilişkin araştırmalar ve sonuçları. *XIII. Türkiye'de İnternet Konferansı Bildirileri*, 35-40. Ankara.

Kavak, O., & İlhan, G. O. (2021). Sosyal bilgiler dersi etkin vatandaşlık öğrenme alanına yönelik dijital çizgi roman tasarımı: "Minik Vatandaşlar". *Öğretmen Eğitiminde Yenilikçi Araştırmalar Dergisi*, *2*(3), 243-265. https://doi.org/10.29329/jirte.2021.408.5

Kaya, M. T., & Yazıcı, H. (2019). Sosyal Bilgiler öğretmenlerinin teknopedagojik eğitim yeterliklerine ilişkin görüşleri. *ETÜ Sosyal Bilimler Enstitüsü Dergisi, 9,* 105-136.

Keskin, A., & İlhan, G. O. (2021). Değerler eğitimine yönelik dijital çizgi roman tasarımı: "Gizemli Labirent". *İnsan ve Sosyal Bilimler Dergisi*, *4*(1), 250-264. https://doi.org/10.53048/johass.923826

Kırımlı, H. & Demirezen, S. (2022). Sosyal bilgiler öğretmenlerinin web 2.0 teknolojilerine yönelik görüşleri. Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi, (62), 527-558. https://doi.org/10.21764/maeuefd.1024814

Kıyıcı, F. B. (2010). The definitions and preferences of science teacher candidates concerning Web 2.0 tools: a phenomenological research study. TOJET: The Turkish Online Journal of Educational Technology, *9*(2), 185-195.

Korucu, A. T. & Çakır, H. (2014). Bilgisayar öğretmeni adaylarının dinamik web teknolojilerine yönelik görüşleri. XVI. Akademik Bilişim Konferansı, Mersin.

Korucu, A. T., & Karalar, H. (2017). Sınıf eğitimi öğretim elemanlarının web 2.0 araçlarına yönelik görüşleri. *Trakya Üniversitesi Eğitim Fakültesi Dergisi*, 7(2), 456-474. https://doi.org/10.24315/trkefd.304255

Korucu, A. T., & Sezer, C. (2016). WEB 2.0 teknolojilerini kullanma sıklığının ders başarısı üzerindeki etkisine yönelik öğretmen görüşleri. *Eğitim ve Öğretim Araştırmaları Dergisi, 5*(2), 379-394.

Korucu, A. T., & Yücel, A. (2015). Bilişim teknolojileri öğretmenlerinin dinamik Web teknolojilerini eğitimde kullanmalarına yönelik görüşleri. *Eğitim Teknolojisi Kuram ve Uygulama*, *5*(2), 126-152.

Lawless, K. A., & Pellegrino, J. W. (2007). Professional development in integrating technology into teaching and learning: knowns, unknowns, and ways to pursue better questions and answers. *Review of Educational Research, 77*(4), 575-614.

Liu, S. H. (2013). Teacher professional development for technology integration in a primary school learning community. *Technology, Pedagogy and Education, 22*(1), 37–54.

Maxwell, J. A. (2018). *Nitel araştırma tasarımı: Etkileşimli bir yaklaşım.* M. Çevikbaş (Ed.). Nobel.

McLoughlin, C., & Lee, M. J. (2007). Social software and participatory learning: pedagogical choices with technology affordances in the Web 2.0 era. *In ICT: Providing choices for learners and learning*. Proceedings as cilite Singapore, 664-675.

Means, B. (1994). Using Technology to Advance Educational Goals. In B. Means (Ed.), *Technology and Education Reform: The Reality Behind the Promise* (1-22). Jossey-Bass.

Mete, F., & Batıbay, E. F. (2019). Web 2.0 uygulamalarının Türkçe eğitiminde motivasyona etkisi: Kahoot örneği. *Ana Dili Eğitimi Dergisi*, *7*(4), 1029-1047. https://doi.org/10.16916/aded.616756

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis*. Sage.

Nelson, M. J., & Hawk, N. A. (2020). The impact of field experiences on prospective preservice teachers' technology integration beliefs and intentions. *Teaching and Teacher Education, 89*, 1-12.

Newton, L., & Rogers, L. (2003). Thinking frameworks for planning ICT in science lessons. *School Science Review. 84*(309), 113-119.

Norton, P., & Hathaway, D. (2008). On its way to K–12 classrooms, Web 2.0 goes to graduate school. *Computers in the Schools, 25*(3-4), 163-180.

O'Connor-Petruso, S.A. (2010). Embedding asynchronous and synchronous technologies & sourceware into curricula. In S. A. O'Connor-Petruso & F. Girelli-Carasi (Eds.), *Globalization: Technology, literacy & curricula* (pp. 13-33). Pearson Custom.

Orhan Göksün, D., & Aşkım Kurt, A. (2018). Öğretim teknolojilerinin temelleri. A. A. Kurt, (Ed.), 21*. yüzyıl öğrenci ve öğretmen becerileri in* (pp.95-114). Nobel.

Öksüz, C., Ak, Ş., & Uça, S. (2009). İlköğretim Matematik Öğretiminde Teknoloji Kullanımına İlişkin Algı Ölçeği. *Yüzüncü Yıl Üniversitesi, Eğitim Fakültesi Dergisi,* Haziran 2009, *1*,(1), 270-287.

Önal, N. (2018). *Etkinlik Örnekleriyle Zenginleştirilmiş Eğitimde Teknoloji Uygulamaları*, Ankara: Pegem Akademi.

Özer, Ü., & Albayrak Özer, E. (2017). Sosyal bilgiler ile bilgisayar ve öğretim teknolojileri öğretmeni adaylarının eğitimde web 2.0 kullanımına yönelik görüşleri. International Congress on Politic, Economic and Social Studies, 106-118, Ankara.

Pala, F. (2021). Sosyal bilgiler dersi tarihe yolculuk ünitesi bağlamında dijital hikâye kullanımının öğrenci akademik başarı ve kalıcılığa etkisi. *Dumlupınar Üniversitesi Eğitim Bilimleri Enstitüsü Dergisi*, 5(2), 43-58.

Palaigeorgiou, G. & Grammatikopoulou, A. (2016). Benefits, barriers and prerequisites for Web 2.0 learning activities in the classroom: The view of Greek pioneer teachers. *Education*, *13*(1), 2-18. https://doi.org/10.1108/ITSE-09-2015-0028

Patton, M. Q. (2018). *Nitel araştırma ve değerlendirme yöntemleri*. M. Bütün ve S.B. Demir (Ed.), Pegem.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon, 9*(5), 1–6.

Pritchett, C. G., Pritchett, C. C., & Wohleb, E. C. (2013). Usage, barriers, and training of Web 2.0 technology applications. *SRATE Journal*, *22*(2), 29-38.

Sadaf, A., Newby, T. J. & Ertmer, P. A. (2016). An investigation of the factors that influence preservice teachers' intentions and integration of Web 2.0 tools. *Educational Technology Research and Development*, *64*(1), 37-64.

Saygıner, Ş. (2016). Öğretmen adaylarının bilgisayar yeterlilik düzeyleri ile teknolojiye yönelik algıları arasındaki ilişkinin çeşitli değişkenler açısından incelenmesi*. Mustafa Kemal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 13(34), 298-312.

Seyhan, A., & Küçük, S. (2021). Sosyal bilgiler öğretmenleri ve öğretmen adaylarının eğitsel artırılmış gerçeklik uygulaması geliştirme deneyimleri. *Yükseköğretim ve Bilim Dergisi*, *11*(1), 56-63.

Shin, S., Brush, T. A., & Saye, J. W. (2019). Using technology-enhanced cases in teacher education: An exploratory study in a social studies methods course*. Teaching and Teacher Education, 78*, 151-164.

Simpson, A. (2010). Integrating technology with literacy: Using teacher-guided collaborative online learning to encourage critical thinking. ALT-J: *Research in Learning Technology*,18(2), 119-131.

Sivin-Kachala, J. & Bialo, E. (2000). *Research report on the effectiveness of technology in schools.* Washington, DC: Software and Information Industry Association.

Spiezia, V. (2010). Does computer use increase educational achievements? Student-level evidence from PISA. *OECD Journal: Economic Studies,* 127-148.

Şad, S. N. & Nalçacı, Ö. İ. (2015). Öğretmen Adaylarının Eğitimde Bilgi ve İletişim Teknolojilerini Kullanmaya İlişkin Yeterlilik Algıları*. Mersin Üniversitesi Eğitim Fakültesi Dergisi, 11*(1), 177-197.

Taşdemir, F. S. (2021). *Sosyal bilgiler öğretmenlerinin öğrenme ve öğretme süreçlerinde sosyal medyayı kullanma düzeylerinin çeşitli değişkenler açısından incelenmesi/Social studies teachers' levels of using social media in teaching and learning processes in terms of various variables.* (Publication No. 147645) 667958 (Master's thesis, Bursa Uludağ University, Council of Higher Education Thesis Center, Turkey.

Tatlı, Z., Akbulut, H. İ., & Altınışık, D. (2016). Öğretmen adaylarının teknolojik pedagojik alan bilgisi özgüvenlerine web 2.0 araçlarının etkisi. *Turkish Journal of Computer and Mathematics Education*, *7*(3), 659.

Tavares, N. J., Chu, D., Ho, S. Y., Chow, K., Siu, F. L. C., & Wong, M. (2012). *Developing upper primary students' 21st century skills: Inquiry learning through collaborative teaching and Web 2.0 technology*. Hong Kong: Centre for Information Technology in Education, Faculty of Education, The University of Hong Kong.

Tepe, T., & Çelik, Ç. (2021). Farklı web 2.0 araçları kullanımının sosyal bilgiler öğretmen adaylarının dijital okuryazarlık ve BİT kullanım yeterlilikleri üzerine etkisi. 4. Uluslararası Bilim Teknoloji ve Sosyal Bilimlerde Güncel Gelişmeler Sempozyumu, 215-223, Gaziantep.

Timur, S., Timur, B., Arcagök, S., & Öztürk, G. (2020). Fen bilimleri öğretmenlerinin web 2.0 araçlarına yönelik görüşleri. *Kırşehir Eğitim Fakültesi Dergisi*, *21*(1), 63-108. https://doi.org/10.29299/kefad.2020.21.01.003

Torrez, C. A. (2010). "Because I was curious": Oral histories and web 2.0 in elementary social studies methods. *International Journal of Technology in Teaching and Learning*, 6(2), 146-156.

Tünkler, V. (2021). Sosyal bilgilerde kavram öğretiminde web 2.0 araçları: öğretmen adaylarının görüşleri. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi*, (53), 234-260. https://doi.org/10.9779/pauefd.795619

Ünal, E. & Uzun, A. M. (2019). Using web 2.0 technologies to support teacher candidates' content development skills. *Cypriot Journal of Educational Science*. 14(4), 694-705. https://doi.org/10.18844/cjes.v11i4.3737

Vannatta, R. A., & Nancy, F. (2004). Teacher dispositions as predictors of classroom technology use. *Journal of Research on Technology in Education, 36*(3), 253-271.

Yaylak, E., & İnan, S. (2018). Sosyal bilgiler öğretmenlerinin eğitimde sosyal medyayı kullanma düzeyleri. *Eğitim Kuram ve Uygulama Araştırmaları Dergisi*, 4(2), 62-87.

Yazıcı, S., Ocak, İ., & Bozkurt, M. (2021). Web 2.0 araçları ile ilgili eğitim çalışmalarının incelenmesi. Eğitim ve Toplum Araştırmaları Dergisi, 8(2), 474-487. https://doi.org/10.51725/etad.1009299

Yıldırım, A., & Şimşek, H. (2018). *Sosyal bilimlerde nitel araştırma yöntemleri*. Seçkin.