Journal of Interdisciplinary Education: Theory and Practice

Pre-Service Teachers' Opinions on Learning, Designing, Utilizing Web 2.0 Tools in Education

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ABSTRACT

This was conducted to investigate the views of preservice teachers about learning Web 2.0 tools and using these tools to create educational digital content. The study was designed in qualitative research method. Semi-structured interviews were carried out to collect data from 18 preservice teachers studying in various programs in the faculty of education. The data were analyzed using content analysis. Findings showed that students emphasized the effortlessness of learning Web 2.0 tools and the convenience of designing and integrating educational digital content into the teaching and learning process. Although they indicated their concerns about utilizing these tools, they found these tools useful in terms of attracting attention, increasing learning retention, improving creative thinking and facilitating learning well as practical in terms of saving time, accessing resources and sharing information. They were very contented with using these tools that were supportive to improve the instructional practices in their own field even though very few of them thought differently. Finally, they were willing to utilize these tools in their future classroom settings.

ARTICLE INFO

Article History:
Received: 07.05.2022
Received in revised form: 15.07.2022
Accepted: 16.07.2022
Available online: 01.12.2022
Article Type: Standard Paper
Keywords: Learning, designing, utilizing, Web 2.0 tools, preservice teachers.

1. Introduction

Web 2.0 has made substantial advances in online communication tools and the rapid spread of freely accessible user-generated content (Sönmez & Çakır, 2021). These advancements have changed how interactions between student-student and student-teacher occur and created a global venue in which information can be produced, disseminated, repurposed, reorganized and exchanged (Yuen, Yaoyuneyong & Yuen, 2011). Web 2.0 tools and applications, which enable communication and cooperation between students and teachers, bring distance and classroom education-teaching to a new age-appropriate level by offering a learning approach towards experimentation and entertainment for students (Hursen, 2020). The features such as personalizing and changing content, adding media elements, sharing, interactive use, collaborating, and ease of use, Web 2.0 tools and applications are used efficiently and widely, especially in the education sector, and enable students to improve themselves in many ways (Ozcinar et al., 2020). Web 2.0 applications are perfect for use in education, with the participation of students, learning styles that will simplify and improve students' learning, and increase their motivation (Halim & Hashim 2019).

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DOI: https://doi.org/10.47157/jietp.1113530

Web 2.0 tools that develop many different features such as self-confidence, motivation and critical thinking while solving problems ensure that students become active learners (Major, 2018). Using Web 2.0 tools in learning and teaching not only contributes to innovative teaching, but also provides a solid educational environment for students and teachers (Muhaimin, Mukminin, Pratama & Asrial, 2019). Apart from these, another important issue is that teachers' use of Web 2.0 tools and materials with visual and audio content away from classical teaching increases the motivation of the teachers and the quality of the education given to the students (Mahapatra, 2015). Web 2.0 tools that provide such benefits in education can be used to teach curriculum content, store data, create/edit video, edit photos, collaborate and much more. Some of the most used Web 2.0 tools in education are mentioned below.

1.1. Infographics

The amount of information that people need to learn and use around the world is increasing day by day. One of the tools that allows digesting this information in the fastest and simplest way is infographics, which is a combination of information and graphic words. The ability of infographics is to convey the intended basic message in the most understandable and common way, in a visual and design way. It is a system that conveys the complex information that needs to be given to the person clearly and quickly with different elements such as logos, charts, graphics or calendars (Damyanov & Tsankov, 2018). Infographics have been used in many different fields such as health services and finance, for features such as information transmission and making promotions more effective (Scott, Fawkner, Oliver, & Murray, 2016).

Visual aids in education are important elements for students to help learn information permanently. According to a study, when the text and visual content were compared, it was determined that the version containing the image was 6.5 times more durable than the other (Scott et. al., 2016). The effective design of content maximizes the positive impact on the target audience by increasing attention and making the conveyance of the content more successful in an educational way (Mayer, 2008; Ustun & Tracey, 2020).

1.2. Digital Storytelling

Storytelling has been one of the methods of transferring information from generation to generation and from person to person since ancient times. Digital storytelling is the technology-supported new version of this transmission method. Digital storytelling includes a process to make short, creative videos of several minutes produced without the need of professionalism of filmmaking, using footage, voice overs (Robin, 2008), other social media elements and interactive elements. The purpose of these stories is wide-ranging and can be producing a personal story, making advertisements more attractive, highlighting a health issue or educational purposes.

The contribution of the digital story to the field of education is indisputable, except for other areas of use. Many studies in the literature have proven that digital storytelling can strengthen students' abilities such as writing, expression, creativity, problem-solving, and critical thinking (Wu, 2012). Moreover, digital stories are effective in increasing the interaction between students and the teacher-student relationship, raising team spirit, improving students' and teachers' knowledge of technology (Di Blas, Paolini & Sabiescu, 2012). Apart from these, according to Goodman and Newman (2014), it was understood that digital storytelling is effective in reducing the characteristics such as anger, anxiety and stress of adolescent students and contributes positively to their emotional and psychological health. The advantages of digital storytelling are gradually increasing with the development of technology.

1.3. Online Bulletin Board

Online bulletin board platforms, which have a significant place in education and generally provide free access, make education more organized, interesting and effective, unlike other online platforms (Azizul, Ismail, Othman & Wan Azlan, 2021). Due to their flexibility and versatility, online bulletin platforms can be tailored to the requirements in order to maximize the impact of e-learning (Dhawan, 2020). According to the work of Deni and Zainal (2018), thanks to Padlet, an online platform where

students' answers can be seen and followed, teachers were able to identify the issues that students had problems with and develop teaching methods according to their suitability for each student. Online bulletin platforms also include simulations that enable students to take more responsibility and have more proactive motivation (Al-Maqtri, 2014). Apart from these, it has been understood that the Flipgrid application, which is one of the online bulletin platforms, has a positive place in reducing speech anxiety in students (Tuyet & Khang, 2020). Online bulletin platforms have positive impacts on language education such as increasing oral fluency, making a significant improvement on learning grammar, encouraging collaborative learning, increasing confidence, and allowing visual learning (Azizul et. al., 2021; Haris, Yunus & Badusah, 2017; Rashid, Yunus & Wahi, 2019).

1.4. Online Game-Based Assessment Tools

Evaluations, which are used in many fields today and have different types, are important for institutions in order for the work to progress efficiently and completely (Karaoglan-Yilmaz, Ustun & Yilmaz, 2020). Game-based evaluation, which is one of the most used evaluation methods recently, differs from classical evaluations in that it is user-friendly, powerful and effective. Game-based assessment tools have taken their place among the indispensables of education today. One of the biggest reasons for this is that the game has a very important place in our daily life, especially for students. According to a study conducted in the USA, it has been determined that 72% of students between the ages of 13 and 17 play games daily or weekly (Lenhart, 2015). With the high interest in the game, the educators had to make research about adding the game to the education, and thus game-based training and evaluations have been revealed. Game-based education elements contribute to students in many ways, such as increasing their motivation, problem-solving abilities, critical thinking abilities, and communication with each other (Wu, 2018). Unlike traditional assessment, game-based assessments encourage students to make more efforts and present a scenario closer to real life (DiCerbo, 2014). This ensures that the evaluation results are more efficient. The fact that the game-based assessments are online has made it easier for both students and teachers to use these systems and get results, and the fact that most of them are free has made it easier to access and reach more people.

1.5. Word Cloud

Word cloud, one of the text visualization techniques and also called as tag cloud, is very helpful in bringing the desired words of the text to the fore. It is used in countless fields as they are easy to understand, suitable for all ages and can be learned quickly (Jayashankar & Sridaran, 2017). Accordingly, it is frequently used in the field of education, where visuality is important and increases the effect of learning. There have been many studies investigating the effectiveness of the word cloud on education. According to Mahmoodi and Talang (2013), word cloud technique has positive effects in terms of long-term vocabulary development for both students and educators. Another study shows that students enjoy and have fun using different kinds of word cloud tools (Miley & Read, 2011). Thus, word clouds play an important role in learning, as interesting activities trigger prior knowledge and encourage independent thinking. (Jayashankar & Sridaran, 2017). In addition, word clouds have positively influenced participation and critical thinking in online discussions (Behar-Horenstein & Niu, 2011). Despite being simple, word clouds have been and continue to be an important part of education.

1.6. Purpose of Study

Traditionally, pre-service teachers do not necessarily get the chance to try different types of technology for preparing digital content for students before they actually start working in the education industry. It is very complicated for these teachers to start exploring different tools to design and integrate digital content into the teaching and learning process when they start working, as they lack prior hands-on experiences. Introducing various practices and tools to pre-service teachers have been found to increase self-confidence in creating digital content as well as familiarity with the tools, knowledge, and positive attitudes that will help them in their careers in the long run (Cirit, 2015; Gursoy & Goksun, 2019). Therefore, the purpose of this study is to explore the experiences and insights of pre-

service teachers as they design digital educational content in their subject areas by using various Web 2.0 tools while they get ready for their full-time careers during their undergraduate years.

2. Method

2.1. Research Design

The qualitative research method was employed to reveal the pre-service teachers' thoughts about the use of Web 2.0 tools in the field of education and the preparation of various digital content with them for educational purposes. Qualitative research is a significant research method in terms of determining how individuals interpret their experiences and how they give meaning to these experiences (Glesne, 2013). The aim of using the qualitative method was to gain in depth information about participants' opinions on utilizing Web 2.0 tools in an educational environment. Patton (2002) indicates that qualitative methods enable researchers to gain an understanding of the views and perceptions of respondents in detail.

2.2. Study Group

This study was carried out with pre-service teachers taking an elective course during the spring semester of 2019-2020 academic year at the Faculty of Education. Convenience sampling was used to choose members of the study group in accordance with the study. It is a suitable technique when members of the target group need to meet particular practical criteria like their eagerness to participate in the study or easy accessibility of participants (Etikan, Musa & Alkassim, 2016). Participants were 18 students consisting of 2 (11.1%) male and 16 (88.9%) female in the second year of study at a public university in Turkey. Their ages ranged from 19 to 26 and their average age was 21 years old. They were full-time undergraduate students enrolled in various academic programs including Guidance and Psychological Counseling, Mathematics, Painting, Turkish Language and Social Studies.

2.3. Data Collection Instrument

A semi-structured interview form was employed to collect qualitative data in this study. It was developed by researchers to determine the preservice teachers' thoughts about the learning process of using Web 2.0 tools for educational purposes and their views on the process of designing educational digital content. Three educational technology specialists were asked for advice to assess the questions in the data collection instrument. The changes that provided content and face validity were made according to their suggestions and the questions were finalized as follows:

- Did you learn to use Web 2.0 tools easily? Please explain?
- What were the difficulties or problems you encountered while using Web 2.0 tools? If any, how did you overcome them?
- What skills do you think the Web 2.0 tools you use improve?
- Do you think that the use of the Web 2.0 tools you learned supports the instructional practices in your own field? Why?
- Do you think that you will utilize the Web 2.0 tools you learned in your future career? Why?

2.4. Study Process

The study took a total of 10 weeks in the spring semester of the 2019-2020 academic year. Prior to the study, preparations were carried out to create data collection tools, obtain expert opinions about the data collection tool and finalize it according to their suggestions. Also, a weekly implementation plan was structured by assigning each group with a Web 2.0 tool. The practical hands-on training was provided to them. Preservice teachers learned to use Web 2.0 tools including infographics, digital stories, online bulletin boards, online game-based assessment tools and word clouds. They designed various digital educational materials with each tool. At the end of the study process, interviews with the preservice teachers were carried out. Figure 1 shows the study process.

The preservice teachers worked as a group and on their own. Collaborative groups consisted of 3-4 preservice teachers. Each group chose a Web 2.0 tool and presented the process of the digital education

content that they prepared with the tool they chose and the digital education material they prepared in the classroom. In addition, each preservice teacher prepared digital educational content with each tool toward their own field. A virtual community in which each student had an opportunity to ask any questions regarding learning or using Web 2.0 tools if they need additional help was created. Discussions took place under the supervision of the instructor in the virtual community.

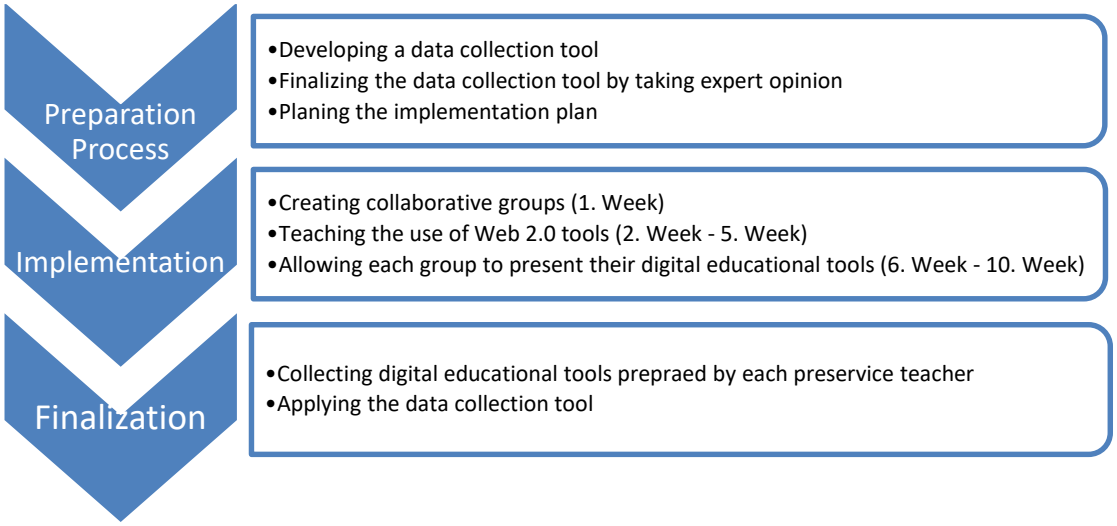

Figure 1. Research process

2.5. Data Analysis

A Content analysis method was used to analyze the data. The fundamental aim of the content analysis is to uncover the concepts that elucidate the collected data while conveying participants' meanings. In order to interpret participants' opinions in a systematic and understandable way in content analysis, researchers draw inferences from the data by finding themes and concepts and bringing them together for meaningful integrations (Yıldırım & Şimşek, 2013).

Gay, Mills and Airasian (2011) point out the process of conducting content analysis as follows: "(1) becoming familiar with the data and identifying potential themes; (2) examining the data in depth to provide detailed descriptions of the setting, participants, and activity; and (3) categorizing and coding pieces of data and grouping them into themes" (p. 467). These steps were taken into consideration through the process of data analysis. The data were divided into meaningful expressions with open coding and these expressions were grouped under the themes according to their relationships. Themes were presented separately under each table in the findings section, and direct quotations were given. In order to protect participants' privacy, code names such as P1, P2 and so on were given to each participant instead of using their real names while using a direct quotation as an example. The reliability of the coding was ensured to apply the formula (number of codes agreed by researchers / total number of codes) by Miles and Huberman (1994). It was found 94% between coders. The coders discussed dissimilar codes between them and reached a consensus to determine the codes they agreed on.

3. Findings

The themes and sample preservice teacher views on the use of Web 2.0 tools in the learning environment were classified according to the tools utilized by preservice teachers and the theme and their views were given in Table 1, Table 2, Table 3, Table 4 and Table 5. The themes and sample opinions that are presented in Table 1 were derived from the qualitative data analysis of preservice teacher views on learning to use Web 2.0 tools.

Table 1. Preservice teachers' view on learning the Web 2.0 tools

Themes	Tools	Examples of Participants' Opinion	Number of Students
Easiness	Infographics	P-13 I think I learned how to prepare infographics in a detailed and easy way.	16
	Word Cloud	P-12 I didn't have any trouble learning how to use it.	17
	Online bulletin board	P-8 Since the applications (Word Art and Padlet) for word clouds and bulletin boards are designed simply and easily, I learned and used them without any difficulty.	16
	Online Game based assessment tools	P-6 I used the Kahoot program. I thought it would be difficult for me to learn, but it wasn't. It was very easy to add questions and save them.	15
	Digital Story	P-9 Yes, I learned easily. I think that I am inclined to do that. I can easily understand and use the technological things I spend time on.	14
Difficulty	Digital Story	P-4 I used the Storyboard application for the digital story. I could not use the application exactly as I wanted. I could only grasp its basic points.	4
	Online Game based assessment tools	P-18 I had to dig a little further to learn about online assessment tools (Kahoot) and infographics (Canva).	3
	Online bulletin board	P-3 I had a little trouble using the Padlet, but the pre-made templates were very helpful.	2
	Infographics	P-5 I can say that I had some difficulties because the infographic and digital story contained many details and required me to make small adjustments and all these details were in a foreign language.	2
	Word Cloud	P-7 I was able to learn, but not easily. They were applications that I didn't know because I didn't come across them before and was reluctant to discover them outside of the classroom unless I had to, and they were actually difficult for me to learn.	1

Table 1 shows the emerging two themes including easiness and difficulty. While the easiness refers to the effortlessness and simplicity of learning the use of Web 2.0 tools, the difficulty refers to the complication of learning the use of the tools. According to results, preservice teachers learned the use of Web 2.0 tools effortlessly and found their usage for educational purposes effortlessly. Most of them indicated that learning the use of the tools was easy although a very few of them had difficulty in learning the use of the tools. Table 2 shows the themes and sample opinions derived from the content analysis of preservice teacher views on the difficulties or problems they encountered while using Web 2.0 tools.

Table 2. Preservice teachers' view on problems while using the Web 2.0 tools

Themes	Tools	Examples of Participants' Opinion	Number of Students
Language Barrier	General	P-15 The sites were in English, there was no Turkish at all, and this was a challenging situation for me.	4
Cost	General	P-16 Asking for being paid membership to do some things was the limitation.	4
Technical Problems	General	P-17 I had difficulty using the tools from time to time because I had internet connection problems.	2
Complexity	Infographics	P-5 I had some difficulties because the infographic contains too many details and fine-tuning.	2
	Digital Story	P-4 I used the Storyboard application for the digital story. I could not use the application exactly as I wanted. I could only grasp its basic points.	2

Table 2 shows the four themes including language barrier, technical problems, cost and complexity. Language barrier refers to the problem of comprehension of using the tool components because of the language of tools. Technical Problems refers to infrastructural issues that are necessary devices such as computers and the internet to use the Web 2.0 tools. Cost refers to the subscription fee to use the Web 2.0 tools. Complexity refers to the complication of the tool components that causes a struggle to understand the use of Web 2.0 tools. The preservice teachers didn't point out a specific Web 2.0 tool that they encountered problems with while using them in terms of language barrier, technical problems and cost. Instead, they mentioned problems in general. However, two students each spoke out about the complexity of infographics and digital stories. Table 3 shows the themes and sample opinions derived from the content analysis of preservice teacher views on skills they improved while using Web 2.0 tools.

Table 3. Preservice teachers' view on skill development while using the Web 2.0 tools

Themes	Tools	Examples of Participants' Opinion	Number of Students
Technology proficiency	General	P-14 All the technological tools I used improved my computer skills and I learned to produce digital content online	11
Research	General	P-1 Using these tools improved my ability to keep up with technology, gather information, manage information, develop and organize innovative strategies	5
Time Management	General	P-4 I think it has improved my time management skills.	2

Communication	General	p-12 Thanks to the tools, we can exchange ideas, discuss the subject and contribute to ideas. At this point, I think it actually improves our communication skills too.	1
Creative thinking	Digital Story	P-12 I think it improved our creativity skills. Creativity was the keystone, especially in the digital story.	7
	Infographics	P-2 I think it improved my design and creative thinking skills.	4
	Online bulletin board	P-3 It improved my skills in using computers, using my creativity, writing information appropriately, researching and learning.	1

Table 3 shows the five themes including technology proficiency, research, time management, communication and creative thinking. Technology proficiency refers to the level of technical skill that preservice teachers improve. Research refers to the exploration of information or resources that they develop. Time management refers to saving time by increasing productivity, effectiveness and efficiency. Communication refers to conveying and exchanging information. Creative thinking refers to the ability to consider or make something different. Preservice teachers talked about the improvement of their different skills in terms of utilizing the Web 2.0 tools, except that they were indicated particular tools in terms of the tools being influential in their creative thinking skills. Table 4 the themes and sample opinions derived from the content analysis of preservice teacher views on the effect of Web 2.0 tools on instructional practices.

Table 4. Preservice teachers' view on the effect of using Web 2.0 tools on instructional practices

Themes	**Tools**	**Examples of Participants' Opinion**	**Number of Students**
Conduciveness	Word Cloud	p-1 Creating a word cloud from the newly learned English words makes the words easier to remember. It can be used by adapting to many subjects that are difficult to memorize words.	18
	Digital Story	p-11 I think that interesting math stories can be created with the digital story and I think that learning can be made more fun in this way.	18
	Online bulletin board	p-10 I can use the digital bulletin board. Permanent learning is provided as it appeals to many senses	17
	Online Game based assessment tools	p-13 Thanks to online game-based assessment tools, because the questions that we prepare enable students to reinforce the subject after the lessons.	17
	Infographics	P-8 I think that infographics are useful as it ensures learning retention because it is visually presented	16

		in an aesthetic way of the mathematical formulas or any information related to the subject	
Uselessness	Infographics	p-6 Using infographics was a visually attractive and cohesive work. With this, it is possible to provide information. It was remarkable. It is nice to see the learning topic as a whole. However, it's a little difficult to utilize in math.	2
	Online bulletin board	p-3 The online bulletin board has some shortcomings so I prefer to use other tools that I can make changes and additions more easily with.	1
	Online Game based assessment tools	p-14 I think that these technological tools contribute to me except online game-based assessment tools	1

Table 4 demonstrates the two themes including conduciveness and uselessness. Conduciveness refers to the contribution of using Web 2.0 tools to support the instructional practices in preservice teachers' own field. Uselessness refers to not contributing to the desired outcome because the use of Web 2.0 tools doesn't support the instructional practices in preservice teachers' own field. They generally believed that utilizing Web 2.0 tools facilitates learning, attracts attention, appeals to more of the senses and increases learning retention by providing the learning content in an aesthetic and visual way. Table 5 the themes and sample opinions derived from the content analysis of preservice teacher views on their intention to utilize the Web 2.0 tools in their future career.

Table 5. Preservice teachers' intention of utilizing the Web 2.0 tools

Themes	**Tools**	**Examples of Participants' Opinion**	**Number of Students**
Definiteness	General	p-9 Of course, I will use the technological tools I learned in the future. I think that technological tools will be my greatest assistant because we handle everything with technology. I am sure that such lectures using technological tools will be more memorable for students. That's why I hope that if I become a teacher one day, I plan to take advantage of technological tools.	6
Strong Probability	General	p-14 Yes, I'm considering using technological tools. Because our age is now the age of technology and the next generation is a generation that grows up with technology. Now, the learning materials used in traditional education are insufficient and cannot fully meet the needs and desires of the students. That's why I think that new technological tools appeal to many children and can be effectively used so using them is beneficial for us and future generations.	10
Probability	General	p-16 I might consider using the web 2.0 tools I learned. They can provide very useful and enjoyable learning. We already use technology in every moment of our normal life. They are versatile, practical and useful.	2

Table 5 demonstrates the two themes including definiteness, strong probability and probability. Definiteness refers to preservice teachers' greatest willingness of utilizing Web 2.0 tools in their future careers. Strong probability refers to their greater willingness of utilizing Web 2.0 tools in their future careers. Probability refers to their willingness of utilizing Web 2.0 tools in their future career despite having a slight hesitation. The findings revealed that students were eager to employ the Web 2.0 tools in their classroom in the future because of the potential of the tools to increase the quality of the teaching and learning process.

4. Discussion

The main purpose of the research was to examine the pre-service teachers' opinions on designing digital educational content for employing them in their own field by using Web 2.0 tools. In the study conducted with infographics, digital stories, online bulletin boards, online game-based assessment tools and word cloud, which are selected among the most used Web 2.0 tools in the field of education, pre-service teachers were asked to create digital educational content using the specified Web 2.0 tools, and interviews were conducted to reveal their experiences about learning and utilizing these tools. While they were being prepared for the future of the digital classroom, insightful results were obtained from their experiences.

According to the results, the learning of related Web 2.0 tools was easy and effortless for most of the students participating in the study. A previous study that supports this result shows that the most important benefits of Web 2.0 tools are: (i) interaction, communication and collaboration, (ii) knowledge creation and (iii) easy and flexible to use (An & Williams, 2010). Web 2.0 tools, which are easy to learn and apply, are very advantageous in terms of educating the next generations of these students, who will be the teachers of the future.

In addition, students who had difficulties with Web 2.0 tools expressed their problems related to the language barrier, technical problems, costs and complexity of applications. However, in general, the number of these participants was very few compared to those who did not have problems, and the problems were not too big to be overcome. In another study conducted by Bolatli and Korucu (2018) to uncover students' experience of using Web 2.0 reveal that there are difficulties in using the tools for the first time in general, but the students can easily use the Web 2.0 tools by overcoming the difficulties in a very short time. In other words, the difficulties encountered in the use of Web 2.0 in the first place can be overcome in a short time for teacher candidates and the expected results can be obtained as given in education.

The results showed that Web 2.0 tools made positive contributions to the development of technology proficiency, research, time management, communication and creative thinking skills of pre-service teachers who participated in the study. It was determined that especially digital stories enabled a significant part of students to develop their creativity. According to the previous literature, Web 2.0 tools have many skill-enhancing features such as communication, problem-solving, self-regulation, communication, and creativity (Ianos & Brezeanu, 2020; Özpınar, 2020). In this way, the tools that contribute to the development of talent are perfect for both students and teachers in making a contribution to education.

One of the results of the study was that the Web 2.0 tools used were useful for preservice teachers in teaching practices. There are many resources in the literature about the contribution of Web 2.0 tools to teaching. Rhoads, Berdan and Toven-Lindsey (2013) state that the inclusion of Web 2.0 tools in education is very important for teachers and students in improving and developing education and contributes greatly to the quality of learning and teaching. Thanks to the usefulness and benefits of Web 2.0 tools in education, teachers are able to make a great contribution to their students.

The majority of the preservice teachers were willing to use Web 2.0 tools and applications in terms of their desire to use Web 2.0 tools in their classroom in the future. According to many previous studies, there are some factors that affect teachers' and pre-service teachers' willingness to use Web 2.0 tools in

their classrooms (Alkhayat, Ernest & LaChenaye, 2020; Muhaimin et al, 2019; Teo, Sang, Mei, & Hoi, 2019). Examples of these factors can be the ability to use technology, the self-confidence in using Web 2.0 tools, the pleasure taken from the applications, and the suitability and effectiveness of the taught subject. According to the results obtained, it is predicted that future teachers will use Web 2.0 tools, one of the best examples of technology, in proportion to the developing technology, and will be beneficial to their students.

With the development and progress of technology, web technologies have also shown great improvement. Web 3.0, which emerged in 2006 and is the third generation of the Web, allows machines to do some thinking processes that are normally unique to humans, apart from the Read/Write/Execute operations (Aljawarneh, 2020). This generation of web tools is more powerful than previous generations in terms of the search feature, marketing, browsing and communication features (Morocho-Lara et. al., 2022). Examples of Web 3.0 are technologies such as Semantic Web, Virtual 3D Web and Artificial intelligence. In addition, Coursera, Khan Academy and Edx, which provide the opportunity to take online courses, can be given as examples of Web 3.0 tools that are widely used in the field of education. Web 4.0 is a technology that is one step ahead of Web 3.0 and is defined as machine learning intelligence for robots (Almeida & Simoes, 2019). This web generation, which is represented as humanoid applications and devices, contains emotional and cognitive features as well as artificial intelligence (Kazimirov, 2018). Web 4.0 tools, whose primary purpose is business-functional efficiency, can be described as a personalized and decentralized Internet (Papcun, Kajáti & Koziorek, 2018). Technologies such as the internet of things (Tosunoğlu & Ustun, 2021), virtual (Ustun, Yılmaz, & KaraoğlanYılmaz, 2020) and augmented reality (Ustun, Simsek, Karaoglan-Yilmaz, & Yilmaz, 2022) are examples of Web 4.0 tools. Especially social and virtual education programs can be the best examples of web 4.0 in the field of education. Tools such as Web 2.0, Web 3.0 or Web 4.0 have advantages such as providing students with a natural experience environment and ease of use, as well as gaining the ability to think critically. (Sumadio, Dwistratanti & Rambli, 2010; Songer, 2007). Therefore, since it is inevitable that web tools will be used more in the future, the possibilities of using these technologies should be increased and they should be made available to more people to use in education.

5. Implications

Some implications can be drawn from this study. As it is known, constantly changing technology and technological tools will continue to develop without slowing down. With the developing technology, the use of new technology is increasing day by day in the field of education as in many other fields. This means the increase and renewal of the applications and tools used in the field of education. It has become an unchangeable reality today that students and teachers use Web 2.0 tools, which consist of applications and tools that provide mutual communication over the internet, are interactive, easy to use and learn, develop creativity and increase self-confidence. The effective use of these tools and applications becomes very important especially for teachers so it is important to educate preservice teachers to find their inherent ability and improve their skills to utilize technological tools. In this research, it is essential that the teachers who have not yet started their profession, who are still continuing their education, have the ability to use Web 2.0 tools in order to do their education in the best way. The more they know about Web 2.0 tools and the more experience they have, the more effective training they will provide in their classroom.

Distance education comes to the aid of educators when face-to-face education is not possible. In fact, distance education can be divided into two groups as before and after the pandemic. Infrastructure for online education existed in some countries before the pandemic (Mishra, Gupta & Shree, 2020), but not very common. Online education and the technologies used have gained special importance after the Covid-19 pandemic because teachers, students and educational organizations have been seriously affected because they were unprepared (Mailizar, Abdulsalam & Suci, 2020). The transition from traditional education to distance and virtual education could not happen smoothly overnight (Ustun & Tracey; 2021). Therefore, the readiness of teachers and students about technology is extremely important for the continuation and effectiveness of education. The best way of preparing teachers to be

ready for the use of technology provide learning environments where they can acquire technological knowledge and skills when they are students. This study created a learning environment where preservice teachers could acquire technological knowledge and skills of using Web 2.0 tools and have the chance to apply their knowledge and skills to create educational content. Their thoughts showed the importance of providing hands-on experiences of using technological tools. In this sense, the curriculum of the faculty of education can be revised to meet the contemporary needs. Therefore, they will be ready to employ digital learning tools in an effective and efficient way and overcome any unexcepted problems like the Covid-19 pandemic that causes the changes of way learning and teaching processes.

6. Conclusions

As in every field, technology develops in the education sector and contributes in many ways. It is vital to educate our generations to adapt technological advances and use technological tools to create value-added products. In this sense, it is necessary to prepare preservice teachers, who will be responsible for teaching, mentoring and guiding next generations for their future life. Learning and using types of technology for designing educational digital content is the basis for increasing the quality of learning and teaching process. This study revealed the experiences and insights of pre-service teachers who had a lack of prior hands-on experiences in learning and using Web 2.0 tools to create educational digital content in their own field. The results demonstrated that providing hands-on experiences for preservice teachers help them to eliminate bias against using Web 2.0 tools for educational purposes and be aware of functions of these tools that contribute to education. For this reason, it becomes very important that practical experiences are increased throughout the country and that the necessary tools and equipment are provided by universities to pre-service teachers. It is a fact that pre-service teachers' negative prejudices toward using Web 2.0 tools should be reduced and practice-oriented courses should be increased so that universities can provide education to future students with confidence.

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