Investigation of Pre-service teachers' Web 2.0 Rapid Content Development Self-Efficacy Belief Levels and their Views on Web 2.0 Tools

Serkan Say[*]
Mersin University, TURKEY

Fatih Serdar Yildirim
Akdeniz University, TURKEY

Abstract: The aim of this study was to examine the pre-service teachers' Web 2.0 rapid content development self-efficacy belief levels and their opinions about Web 2.0 tools. The study was carried out by using "convergent parallel mixed design". In the academic year of 2019-2020, 254 pre-service teachers voluntarily participated in the quantitative part of the study and 30 pre-service teachers voluntarily participated in the qualitative part. "Web 2.0 Rapid Content Development Self-Efficacy Belief Scale of Pre-Service Teachers" was used as quantitative data collection tool. In order to collect qualitative data, a semi-structured interview form was prepared by the researchers. While the quantitative data obtained from the pre-service teachers were analyzed with the T Test and ANOVA, the qualitative data were analyzed using the content analysis technique. As a result of the study, pre-service teachers' Web 2.0 rapid content development self-efficacy belief levels do not differ significantly in terms of gender variable. On the other hand, a significant difference was observed in self-efficacy belief level scores among different departments. Also, the pre-service teachers expressed positive opinions regarding the use of WEB 2.0 tools in the educational environment such as class group formation, presentation preparation and virtual classroom applications.

Keywords: *Web 2.0, rapid content development, self-efficacy, views.*

Introduction

The development of technology has affected every area of life and initiated a process that brought changes together. Web 2.0 makes individuals an effective stakeholder of information production-development-inquiry processes by providing and encouraging the production, development and querying of information (Elmas & Geban, 2012; Rosen & Nelson, 2008) and thus it has the flexibility to be used in different fields. "Web 2.0 tools can be categorized as content providing apps, social networks, video publishing environments, messaging software, Earth apps, Podcasting, Wikis, Blogs (Web logs) and RSS" (Korucu & Cakir, 2015; Korucu & Karalar, 2017). These technological developments have facilitated mutual interaction and information sharing in the fields of information and communication. In the century we are living in, people have gained the opportunity of easy access to information, rapid sharing of information and ease of communication. With the developments in technology, processes are now facilitated in areas such as doing business and coordination of work, time management and individual development. Thus, opportunities to cooperate in many different fields emerged and these opportunities were reflected in different fields. All these changes and developments have led people to produce information rather than consuming it. As a result of this, the individual that our age aims to raise has come forward as an active individual who does not memorize the information presented to him as it is and is not directed or managed by someone, but someone who can interpret the information by oneself and provide an active participation in the process (Yildirim & Simsek, 2008). People are no longer passive; Learning, criticism, questioning, being open to innovations, cooperative work and problem solving skills should be actively used. In short, they are able to show development in accordance with the characteristics of active people accepted by our age (Olkun & Toluk, 2003).

This new age learning is supported by web-based learning tools in education. Internet and various Web-based tools are developed and made available to the public for individuals to easily access and interact with all the information they need (Akkoyunlu & Kurbanoglu, 2003; Castells, 2011). By means of these tools , the period called Web 1.0, which offers

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[*] **Corresponding author:**

Serkan SAY, Mersin University Faculty of Education, Department of Basic Education, Mersin/TURKEY. ✉ serkansay@mersin.edu.tr

only readable content for the users, is left behind and a new era, Web 2.0, which allows users to produce content and interact with the content they produced has emerged (Birisci, et al., 2018). Although there is no clear definition for the Web 2.0 concept (O'Reilly, 2005) that emerged in 2004, it can be defined as 'internet-based innovations that change the roles of individuals'. With these innovations, individuals who produce and share information and content and interact in these processes have taken the place of the individuals who use web content passively (Brown, 2009; Horzum, 2010). The role of the individual is differentiated and developed on the basis of new generation Web 2.0 tools, and modern individuals who adapt to this process are expected to have the skills to determine, produce and share the correct information using many different technologies (Direkci, et al., 2019). It is seen that the number of Web 2.0 tools that can be used in education and instruction environment have been increasing recently as well as the variety of facilities they offer. (Altiok, et al., 2016). Web environments have become important learning environments as the content can be accessed without space and time restrictions in addition to the specified features. As a result of offering a structure that can be accessed at any time; individuals can collaborate to create a working environment. In terms of education, with the development of technologies, a student-centered approach can be created, so the student can be provided with the flexibility to work at the appropriate speed and time. With this flexibility and easy access to various Web 2.0 tools, individuals had the opportunity to plan and maintain their own development with their own resources (Ozerbas & Mart, 2017). Also, new technologies provide convenience and support to students and teachers with the opportunities they offer. Today, Web 2.0 tools provide students with the opportunity to create content, change content, control content and socialize in our age where students are expected to participate and contribute actively in creating an effective learning environment,

 (Altiok et al., 2016). As a result, Web 2.0 tools are recommended to be used in educational environments with a structure that supports the change and development of the education system, adapts to innovations and encourages high level of technology in the field of education (Elmas & Geban, 2012).

While education systems of developed countries are revised by creating technology-oriented curriculum and learning environments in accordance with the requirements of the age, educational institutions aim to make teachers and students actively use these technologies. Lately, educational institutions in our country have been equipped with smart boards, tablets, computers and similar technological tools instead of previously used teaching materials. In Turkey, breakthroughs such as the Movement of Enhancing Opportunities and Improving Technology (FATIH) project and the Educational Information Network (Egitim Bilisim Agi [EBA]) platform have been founded and the curriculum has been revised in order to ensure education-technology integration (EBA, 2017; Turkish Ministry of National Education [MoNE], 2012), and as a result, contents enriched with multimedia elements in the form of sound, video and animation produced through web-based technologies in educational environments (EBA, 2017) have been actively used. After this point, the task passes to the teachers who are the executives of the teaching activities. Another aspect that should be mentioned within this context is that, besides using web technologies, teachers are curious, interested and open to innovations about web-based applications for the subjects they teach in the lessons (Birisci et al., 2018). Although technology-based digital applications and contents that teachers can use in their lessons are offered within the scope of new projects in education, it is up to teachers to keep them up-to-date and diversify (MoNE , 2012). For this reason, each teacher is expected to have the ability to develop materials and content related to his / her field by utilizing technology.

Along with the technological developments in education, teachers have been offered a suitable environment to create a teaching environment, prepare lesson materials and do interactive teaching on online and offline platforms. However, equipping educational institutions with technological tools is not sufficient at the paint of using technology in education (Elmas & Geban, 2012). When studies in this field are analyzed, it is observed that educational institutions have developed their technological infrastructure, however, this infrastructure is not used efficiently by teachers in education activities (Akinci et al., 2012; Ekici & Yilmaz, 2013). The reason why teachers cannot use this infrastructure efficiently is their unwillingness to use them due to their inability to develop content and make technology-based teaching by using technology (Abbit, 2011; Collis & Moonen, 2008; Tatli et al., 2016; Kul et al., 2019). As a solution to this problem, besides providing in-service education activities for teachers working in schools, pre-service teachers should be educated about WEB 2.0 and other platforms and to develop materials that can use their technological-pedagogical-field knowledge in harmony and use in the educational process (Altiok et al., 2016). Thus, it is considered important for pre-service teachers to develop rapid content using Web 2.0 tools and to determine their level of competence in this regard in terms of planning educational activities. In this scope; we aim to examine the pre-service teachers' Web 2.0 rapid content development self-efficacy belief levels and their opinions about Web 2.0 tools. This study aims to answer the following research questions:

1. What is the current situation of pre-service teachers' self-efficacy beliefs about Web 2.0 rapid content development?

    1-1. Does gender make a difference in pre-service teachers' self-efficacy beliefs about Web 2.0 rapid content development?

    1-2. Does department make a difference in pre-service teachers' self-efficacy beliefs about Web 2.0 rapid content development?

2-What do pre-service teachers think about the usage of Web 2.0 tools?

Methodology

Research Design

In this study, the mixed method was carried out with a scientific approach in order to understand and interpret the expressed problem in a more descriptive and consistent manner by using qualitative and quantitative data together. Mixed method research offers an alternative approach to the researcher in achieving the "depth and detail" where quantitative research methods are weak and "generalization and prediction" where qualitative research methods are considered insufficient (Yildirim & Simsek, 2013). Mixed method researches have many designs. Especially in the literature, it is seen that the said patterns are expressed in different ways. In this study, the determination of the self-efficacy levels of pre-service teachers for Web 2.0 rapid content development and the opinions of the pre-service teachers were examined through the "convergent parallel mixed pattern" which is one of the mixed research patterns expressed by Creswell (2011). Qualitative and quantitative data, which are equally important in the converging parallel pattern, are collected together, analyzed separately, and at the last point, the similarities and differences between the quantitative and qualitative findings are compared and interpreted. Thus, a better overall result is aimed (Creswell & Plano Clark, 2011).

In the quantitative part of the research, Web 2.0 rapid content development self-efficacy belief levels of pre-service teachers were determined by survey model and the current situation was handled with a cross-sectional approach. In the qualitative part of the research, however, the examination of pre-service teachers' opinions about Web 2.0 tools was examined in accordance with the qualitative status pattern. The data of the study were handled in accordance with the principle of analyzing the qualitative and quantitative data applied in a converging parallel mixed pattern independently and evaluating the results together

Participants of the study

The study group of the research consists of pre-service teachers of 3rd grade studying at the education faculty of a public university in the 2019/2020 academic year. Purposeful sampling technique was preferred for determining the study group in the quantitative part of the study, maximum diversity sampling technique was preferred in the qualitative part. In addition, 1st grade students were not included in the study because they should have taken pedagogical, general culture and field education courses in order to understand the structure and purpose of the study in line with the opinions of 3 different field experts. 254 volunteer candidates participated in the quantitative part of the study and 30 volunteer candidates participated in the qualitative part.

Table 1. Information about the study group of the quantitative part of the research

| Department | Gender | | | % |
	Male	Female	Total	
Preschool	16	2	41	16.14
Primary School	19	24	43	16,92
Science	16	29	45	17,77
English	15	21	36	14,17
Mathematics	16	27	43	16,92
Turkish	15	31	46	18.11
Total	97	157	254	
%	38,2	61,8		100,0

When Table 1, which presents information about pre-service teachers participating in the quantitative part of the study, is examined, it is observed that a study group of 254 people, 157 of which are women and 97 of which are men, was formed. When the study group is analyzed by departments, it is seen that there are pre-service teachers studying in Turkish (46), Science and Technology (45), Mathematics (43), Primary School (43), Pre-School (41) and English (36) teaching departments.

However, in the quantative part of the research, a study group of 30, consisting of pre-service teachers studying in departments of Turkish (5), Science and Technology (5), Mathematics (5), Primary School (5), Preschool (5) and English (5), 17 female and 13 male, has been formed using the maximum diversity sampling method and on voluntary basis. The purpose of maximum diversity sampling is to create a rich and small study group with different characteristics and to examine similar and different aspects related to the research problem or the situation (Yildirim & Simsek, 2013). For this purpose, a diverse working group has been created on the basis of department and gender variables. Information about the participants is presented in Table 2.

Table 2. Information about the participants of the qualitative part of the research

Department	Gender		Total
	Male	**Female**	
Preschool	1	4	5
Primary School	2	3	5
Science	3	2	5
English	2	3	5
Mathematics	3	2	5
Turkish	2	3	5
Total	13	17	30

Data Collection Tools

Quantitative data collection tools: Web 2.0 Rapid Content Development Self-Efficacy Belief Levels Scale (W2SEB) of Pre-service teachers: Birisci et al. (2018) have developed to measure the belief in self-efficacy regarding the usability of content development tools in the preparation, presentation and evaluation phases of the courses. The scale, developed with pre-service teachers from different fields, consists of 21 items in 3 sub-dimensions. A 5-point Likert-type rating was used in the items in the scale. The points that can be obtained from W2SEB are in the range of 21-85. As the score obtained from W2SEB increases, individuals' self-efficacy perceptions towards using Web 2.0 tools increase. Cronbach's Alpha reliability coefficient of this scale used in the research was calculated to be .955. In this study, reliability of this assessment tool has been calculated to be ,83. Both the AFA and DFA fit index values of the scale were examined and as a result, it was found that the scale was a reliable and valid scale.

Qualitative data collection tools: In order to collect data in the research, a semi-structured interview form was created by the researchers. A form of 7 questions was prepared, paying attention to covering the outline of the subject. This prepared form was developed in accordance with the feedbacks received from 2 field experts and it was tested with 5 pre-service teachers. Semi-structured interviews were made with 30 pre-service teachers who participated in the qualitative part of the study and sound recording was taken. Voice recordings were transcribed electronically. The final form included the following questions:

Analysis of Data

Analysis of quantitative data: In the research, quantitative data were obtained with the "pre-service teachers' Web 2.0 Rapid Content Development Self-Efficacy Belief Levels Scale". The data of the research was analyzed with T Test and ANOVA. Before data analysis, assumptions for t-test and ANOVA were checked and it appeared that data were appropriate for analysis with t-test and ANOVA in terms of independence of cases, normality and homogeneity of variances.

Analysis of qualitative data: The analysis of the data obtained by transcribing the sound recordings was made using the content analysis technique. After examining the data, the codes were extracted and then the themes were formed. Accordingly, two encoders were included in the execution of the analysis process, and the codecs were analyzed by coding according to the themes and the consistency was aimed in this manner. In addition, in order to examine the consistency of the codes and themes formed as a result of the analysis, a meeting was held with an expert, and the data was finalized in accordance with the unanimous / majority vote principle. In addition, descriptions and direct quotations were used to increase the transferability of the study. For this purpose, the numbers related to the codes were specified in the findings section and presented in tables.

Findings

Quantitative Findings

In this part of the research, the findings obtained by analyzing the quantitative data by using statistical analysis programs will be included. The data of the research was analyzed with T Test and ANOVA. In the analysis, the level of significance was taken as $p < .05$.

Table 3. Distribution of pre-service teachers' WEB 2.0 rapid content development self-efficacy belief levels by department

Department		N	Min.	Max.	Average	Std. D.
Preschool	Preparation	41	27	41	33.95	3.633
	Presentation	41	7	13	9.15	1.682
	Evaluation	41	5	11	8.29	1.209
	Total	41	43	61	51.39	4.230
Primary School	Preparation	43	35	54	45.60	5.381
	Presentation	43	13	20	16.91	1.862
	Evaluation	43	11	19	15.16	2.023
	Total	43	66	91	77.67	6.293
Science	Preparation	45	35	62	47.24	6.692
	Presentation	45	12	18	15.02	1.960
	Evaluation	45	11	19	16.09	2.130
	Total	45	64	95	78.36	6.932
English	Preparation	36	35	54	43.31	5.120
	Presentation	36	10	18	14.14	1.839
	Evaluation	36	11	18	15.11	2.081
	Total	36	64	85	72.56	5.882
Mathematics	Preparation	43	20	39	29.86	4.346
	Presentation	43	8	13	10.15	1.406
	Evaluation	43	11	18	13.98	1.921
	Total	43	44	62	53.81	4.344
Turkish	Preparation	46	30	51	40.39	5.524
	Presentation	46	7	14	10.15	1.813
	Evaluation	46	7	13	9.04	1.366
	Total	46	49	74	59.59	5.718

When Table 3 is analyzed, it was determined that the total score averages of the Web 2.0 Rapid Content Development Self-Efficacy Belief Levels of the pre-service teachers were 78.36 for Science, 77.67 for Primary School, 72.76 for English, 59.59 for Preschool and 51.89 for Mathematics.

The information about which groups favor the significant difference determined in terms of independent variables regarding Web 2.0 Rapid Content Development Self-Efficacy Belief Levels of the pre-service teachers participating in the study are shown in Tables 4 and 5.

Table 4. T-Test Results of pre-service teachers' Web 2.0 Rapid Content Development Self-Efficacy Belief Levels by Gender

Groups	N	$\bar{x}$	SD	$Sh_{\bar{x}}$	t_{test}		
					t	SD	p
Preparation	Male	97	40.21	7.845	.195	252	.845
	Female	157	40.00	8.367			
Presentation	Male	97	12.56	3.576	.092	252	.927
	Female	157	12.52	3.354			
Evaluation	Male	97	13.23	3.499	1.132	252	.259
	Female	157	12.70	3.658			
Total	Male	97	65.99	12.559	.480	252	.632
	Female	157	65.22	12.413			

*p>.05

When table 4 is analyzed, not a significant difference has been found between the scores of first sub-dimension of Web 2.0 Rapid Content Development Self-Efficacy Belief Levels, preparation self-efficacy (t=.195; p>.05), second sub-dimension, presentation self-efficacy (t=.092; p>.05), third sub-dimension, evaluation self-efficacy (t=1.132; p>.05) and total self-efficacy (t=.480; p>.05) on the basis of variable of gender.

Tablo 5. Results of One-Way Variance Analysis (ANOVA) of pre-service teachers' Web 2.0 Rapid Content Development Self-Efficacy Belief Levels by Department

	Variance Source	Sum of Squares	SD	Average of Squares	F	p
Preparation	Between-subjects	10032.174	5	2006.435	73.195	.000*
	Measurement	6798.251	248	27.412		
	Error	16830.425	253			
	Total	2206.303	5	441.261		
Presentation	Between-subjects	776.945	248	3.133	140.850	.000*
	Measurement	2983.248	253			
	Error	2458.101	5	491.620		
	Total	820.438	248	3.308		
Evaluation	Between-subjects	3278.539	253		148.606	.000*
	Measurement	31245.403	5	6249.081		
	Error	7968.062	248	32.129		
	Total	39213.465	253			
Total	Between-subjects	10032.174	5	2006.435	194.498	.000*
	Measurement	6798.251	248	27.412		
	Error	16830.425	253			
	Total	2206.303	5	441.261		

*p<.05

PS: 1: Preschool 2: Primary School 3: Science 4: English 5: Mathematics 6: Turkish

When table 5 is analyzed, not a significant difference has been found between the scores of first sub-dimension of Web 2.0 Rapid Content Development Self-Efficacy Belief Levels, preparation self-efficacy (F(1-5)= 73.195. p<.05), second sub-dimension, presentation self-efficacy (F(1-5)=140. 850. p<.05), third sub-dimension, evaluation self-efficacy (F(1-5)=148.606. p<.05) and total self-efficacy (F(1-5)=194.498. p<.05) on the basis of variable of department.

On the basis of preparation sub-dimension, Science (x̄=47.24), Primary School (x̄=45.60), English (x̄=43.31) and Turkish (x̄=40.39) pre-service teachers are determined to have higher preparation self-efficacy belief scores than Preschool (x̄=34.028) pre-service teachers. It is observed that Preschool (x̄=33.95) pre-service teachers have a higher average of self-efficacy score compared to mathematics (x̄=29.86) pre-service teachers. It is determined that Primary School (x̄=45.60) pre-service teachers have significantly higher self-efficacy belief scores than Mathematics (x̄=29.86) and Turkish (x̄=40.39) pre-service teachers. Science (x̄=47.24) pre-service teachers have significantly higher self-efficacy belief scores than English (x̄=43.31), Mathematics (x̄=29.86) and Turkish (x̄=40.39) pre-service teachers. It is observed that English (x̄=43.31) pre-service teachers have a higher score compared to Mathematics (x̄=29.86) pre-service teachers.

On the basis of presentation sub-dimension, Science (x̄=15.02), Primary School (x̄=16.91), English (x̄=14.14) and Turkish (x̄=40.39) pre-service teachers are determined to have higher preparation self-efficacy belief scores than Preschool (x̄=9.15) pre-service teachers. Primary School (x̄=16.91) pre-service teachers have significantly higher scores compared to Science (x̄=15.02), English (x̄=14.14), Turkish (x̄=10.15) and Mathematics (x̄=9.93) pre-service teachers. Science (x̄=15.02) and English (x̄=14.14) pre-service teachers have significantly higher scores compared to Mathematics (x̄=9.98) and Turkish (x̄=10.15) pre-service teachers.

On the basis of evaluation sub-dimension, Science (x̄=16.09), Primary School (x̄=15.16), English (x̄=15.11) and Mathematics (x̄=13.99) pre-service teachers are determined to have significantly higher preparation self-efficacy belief scores than Preschool (x̄=8.29) and Turkish (x̄=9.15) pre-service teachers. Also, Turkish (x̄=9.15) pre-service teachers are found to have a significantly higher self-efficacy scores compared to Preschool (x̄=8.29) pre-service teachers.

On the basis of total score; Science (x̄=78.36), Primary School (x̄=77.67), English (x̄=72.56) and Turkish (x̄=59.59) pre-service teachers have a significantly higher self-efficacy belief scores compared to Preschool (x̄=51.39) pre-service teachers. However, it is possible to say that, no significant difference has been found between self-efficacy belief scores of Mathematics (x̄=53.81) and Preschool (x̄=51.39) pre-service teachers. Primary School (x̄=77.67) and Science (x̄=78.36) pre-service teachers have obtained higher scores compared to English (x̄=72.56), Mathematics (x̄=53.81) and Turkish (x̄=59.59) pre-service teachers.

Qualitative Findings

After analyzing the qualitative data through content analysis, 3 themes are determined. These themes are as follows: Defining WEB 2.0 tools, intended purposes of WEB 2.0 tools, using WEB 2.0 tools in educational environment. Information and excerpts about these themes and the codes related to the themes will be presented below. A statement from each participant that stands out for each theme is based on. Also, real names of the participants are not used and

abbreviations of "S" for students, "F" for female, "M" for male, "PT" for Preschool Teachers, "CT" for Primary school teachers, "ST" for Science and Technology Teachers, "ET" for English Teachers, "MT" for Mathematics Teachers and "TT" for Turkish Teachers are used. The numbers given to the participants in the codings are shown only by numbers. The f symbol in the tables indicates the coding frequency.

Pre-service teachers' definitions for Web 2.0 tools: As a result of analyzing the data obtained from the interviews with pre-service teachers, it has been observed that there are different definitions for WEB 2.0 tools. The codes and frequency values for this theme are shown in Table 6.

Table 6. Pre-service teachers' definitions for Web 2.0 tools

Codes	f
Educational and entertaining tools	10
Sharing network	7
Helps with preparing presentations	5
My greatest assistants in classes	3
A new world	3
Partially harmful virtual content and applications	2

In Table 6, pre-service teachers' definitions on WEB 2.0 tools can be observed. Based on the information in the table, it is understood that the pre-service teacher who participated in the study defined these tools as "*educational and entertaining tools*" and "*sharing network*". In addition, the definition of WEB 2.0 tools as "*educational and entertaining tools*", "*helps with preparing presentations*" and "*my biggest assistants in lessons*" can be considered as an emphasis that these tools are also seen as a training tool by pre-service teachers. Sample statements to these descriptions and inferences;

> *"The mediums we use for most of our lives and the applications and contents we prefer for entertainment and socialization needs are offered."* F, ET, 13.

> *"WEB 2.0 tools are known for their interaction-oriented structure and facilitating information sharing."* M, TT, 25

> *"Applications where I find the content that saved my life in the lessons and prepare remarkable assignments for the lessons."* F, PT, 3

The aims of pre-service teachers to use WEB 2.0 tools: The codes and frequency values of the pre-service teachers about the objectives of using WEB 2.0 tools are shown in Table 7.

Table 7. The aims of pre-service teachers to use WEB 2.0 tools

Codes	f
Communicating with my friends	12
Keeping up with the agenda and news	6
Watching / listening to movies, TV series, music etc.	4
Making new friends	4
Accessing information	4

In Table 6, where the aims of using WEB 2.0 tools by pre-service teachers are shown, the phrase *"communicating with my friends"* stands out. This statement is followed by the expression *"keeping up with the agenda and news"* according to the frequency value. The expressions of "*watching / listening to movies, TV series, music etc.*", "*making new friends*" and "*getting information*" stand out as other topics that reflect the aims of WEB 2.0 tools to be used by pre-service teachers. When the expressions and frequency values in Table 8 are examined, it can be said that pre-service teachers whose opinions were taken within the scope of this study used WEB 2.0 tools for communication, receiving news and having fun. Sample statements supporting these judgments;

> *"I use it very often and I am mainly interested in what has happened in the world, in my country and in my environment. I especially prefer social networks for this."* M, CT, 8.

> *"I am actually an old-fashioned person, I usually spend time with books, but nowadays I inevitably use the internet to learn."* F, TT, 30.

Pre-service teachers' opinions about using WEB 2.0 tools in educational environment: The third theme that emerged as a result of content analysis was "Using pre-service teachers WEB 2.0 tools in the educational environment". The codes and frequency values for this theme are shown in Table 9.

Table 9. Pre-service teachers' opinions about using WEB 2.0 tools in educational environment

Codes	f
Creating class groups	9
Preparing presentations	8
Using virtual classroom applications	4
Obtaining information on new / unclear topics	3
Language learning	3
Producing compelling content	2
Preparing interactive learning environment	1

When Table 9 is examined, an interesting point in the interviews with pre-service teachers participating in the study is that all pre-service teachers describe WEB 2.0 tools as educational tools and indicate that these tools will be useful to use these tools in educational environments. When Table 7, which shows the details of this situation, it is understood that pre-service teachers use WEB 2.0 tools frequently for "*creating class groups*", "*preparing presentations*" and "*using virtual classroom applications*" for educational purposes. It is important for pre-service teachers participating in the study to perceive WEB 2.0 tools as educational tools and to provide opinions on how they are used or used in educational settings as a result of their location and education. Sample statements to support these issues;

> "I *especially use an application to communicate both in daily life and to communicate and share information in classrooms in the educational environment.*" M, MT, 21.

> "*Our professors want us to prepare presentations in all classes. That's why I use internet tools to create impressive presentations.*" F, ST, 17.

Conclusion

Qualitative and quantitative data were collected simultaneously and analyzed separately in this study, which was conducted to examine the pre-service teachers' opinions about Web 2.0 rapid content development self-efficacy belief levels and Web 2.0 tools. The findings that emerged as a result of the analyzes were handled together and the results of the study were revealed. It is aimed to elaborate the results by first including the results based on quantitative data and then the results based on qualitative data, and to make a connection in the light of qualitative and quantitative data by dealing together.

In the quantitative part of the study, the scale was applied to determine the pre-service Web 2.0 rapid content development self-efficacy belief levels of the pre-service teachers and the data were analyzed by considering the variables of the department and gender. As a result of this analysis, the scores of pre-service teachers related to Web 2.0 rapid content development self-efficacy belief level do not differ significantly in terms of gender variable. On the other hand, it was seen that the variable of the department made a significant difference in self-efficacy belief level scores. It was observed that there was no significant difference in terms of gender and department common effect variable. In the study conducted by Ozerbas and Mart (2017) on the subject of the pre-service of English teachers, Web 2.0 did not create a significant difference, just as in this study.

In order to determine which groups are in favor of the difference formed according to the department variable, the total scores obtained from the "pre-service teachers' Web 2.0 Rapid Content Development Self-Efficacy Belief Levels Scale" and the scores obtained from the sub-dimensions of the scale (preparation, presentation, evaluation) were examined. According to the total scores of self-efficacy beliefs taken from the scale; Self-efficacy beliefs of Science, Class, English and Turkish pre-service teachers are significantly higher than Preschool pre-service teachers. While there was no significant difference between the total scores of the self-efficacy beliefs of the pre-service teachers and mathematics teachers, the pre-service teachers of the Class and Science scored higher in terms of their self-efficacy beliefs total scores from the pre-service teachers of English, Mathematics and Turkish. In addition, in the preparation sub-dimension of Web 2.0 rapid content development self-efficacy beliefs scale, Science, Class, English and Turkish; In terms of presentation sub-dimension, Science, Classroom and English; In the evaluation sub-dimension, Science, Classroom, English and Mathematics pre-service teachers got higher scores. It is noteworthy that Science, Classroom and English pre-service teachers get higher scores in all three sub-dimensions. Tatli, et al. (2016) stated that pre-service teachers' definition and use of Web 2.0 tools for their own fields had a positive effect on technological and pedagogical knowledge. Ensuring that pre-service teachers become aware of web 2.0 tools that they can use in their own fields and adopt these practices and use them in their professional lives is seen as one of the most important goals of this activity.

In the qualitative part of the study, examinations were made regarding the opinions of pre-service teachers on Web 2.0 tools and as a result, three themes were identified: Defining WEB 2.0 tools, intended purposes of WEB 2.0 tools, using WEB 2.0 tools in educational environment. It has been determined that pre-service teachers generally define WEB 2.0 tools as information sharing and communication-entertainment tool, and use them in order to communicate, follow the agenda, access entertaining content, acquire information and socialize in accordance with these definitions. In study of

Kul & Celik (2018), it came out that pre-service teachers believed that Web 2.0 tools would be beneficial in different learning domains apart from geometry and they appeared to intend to integrate Web 2.0 tools in lessons such as using Powtoon especially in topic explanations with its animation and video preparation functions. Also, in addition to occupational lives, they intended to use Web 2.0 tools in daily life to socially share information related to mathematics. In study of Tatli, et al. (2016), they found out that pre-service teachers -after experiencing Web 2. tools- utilized the content in the TPCK, material and process-reflection sub-dimensions, and focused mostly on the technology dimension. They showed a preference for Powtoon, quiz maker and edraw max applications, as well as an intention to use them in their professional lives. Atav, et al. (2006) stated that pre-service teachers used internet-based tools and applications for communication, entertainment and access to information. Albion (2008) and Horzum (2010) found similar findings in their studies with teachers and stated that teachers generally use these tools for communication and entertainment purposes.

The pre-service teachers expressed positive opinions regarding the use of WEB 2.0 tools in the educational environment and stated that they are already using these tools. Usage areas such as class group formation, presentation preparation and virtual classroom applications expressed by pre-service teachers provide information about the usage areas of Web 2.0 tools in education. Horzum (2010) emphasized the importance of a teacher's or a pre-service teacher's being knowledgeable and using Web 2.0-based tools so they can serve as a model for students and use that technology in lessons.

In addition, Ozturk and Akgun (2012) stated that social media tools can be used in educational environments according to the outcome of their study with pre-service teachers. In this case, it can be said that pre-service teachers can use Web 2.0 tools, which include fun content focused on communication and information, in educational environments and these tools can become widespread.

In the light of all this information, one can say that pre-service teachers have awareness about Web 2.0 tools, they use these tools and information in their lives according to the result of the research examining the levels of Web 2.0 rapid content development self-efficacy beliefs and opinions about Web 2.0 tools. In this respect, it is important for pre-service teachers to demonstrate the skills required by our age such as communication, critical thinking, collaborative work and creativity. However, more importantly, it is beyond the use of ready-made tools and applications to develop this skill, and to produce new and original content. Therefore, it is a must for pre-service teachers to have a good education process at universities and be supported in terms of new developments. It is strongly recommended in this study that course contents should be designed in a way to improve prospective teachers' Web 2.0 content development self confidence levels. There should be elective or must courses to offer pre-service teachers before they start the profession which requires the redesign of curriculums of education faculties. Additionally, an authentic integration and application of various Web 2.0 tools for an effective instruction should be modeled in academic studies and pre-service teachers' reflections should be analyzed deeply with more mixed studies within different contexts.

References

Abbitt, J. T. (2011). An investigation of the relationship between self-efficacy beliefs about technology integration and technological pedagogical content knowledge (TPACK) among preservice teachers. *Journal of Digital Learning in Teacher Education, 27*(4), 134-143.

Akinci, A., Kurtoglu, M., & Seferoglu, S. S. (2012). Bir teknoloji politikasi olarak fatih Projesinin basarili olmasi icin yapilmasi gerekenler: Bir durum analizi calismasi [How can FATIH project achieve its goals? a situation analysis study]. In M. Akgul, U. Çaglayan, E. Derman, A. Ozgit, S. Guven & K. Karaman (Eds.), Proceedings of the 14th Academic Informatics Conference /14. Akademik Bilişim Konferansı Bildirileri (pp. 1-10) Academic Informatics Conference.

Akkoyunlu, B., & Kurbanoglu, S. (2003). Ogretmen adaylarinin bilgi okuryazarligi ve bilgisayar oz-yeterlik algilari uzerine bir calisma [A study on teacher candidates' perceived information literacy self-efficacy and perceived computer self-efficacy]. *Hacettepe University Journal of Education Faculty/ Hacettepe Universitesi Egitim Fakultesi Dergisi, 24(24)*, 1-10.

Albion, P.R. (2008). Web 2.0 in teacher education: Two imperatives for action. *Computers in the Schools, 25*(3). 181-198.

Altiok, S., Yukselturk, E., & Ucgul, M. (2016). WEB 2.0 egitimine yonelik gerceklestirilen bilimsel bir toplantinin degerlendirilmesi: Katilimci gorusleri [Evaluation of a scientific meeting about use of web 2.0 technologies in education: the participants` views]. ITTES 2016: Re-discover Learning with Digital Learners (pp. 490-495). 4th International Instructional Technologies & Teacher Education Symposium. ITTES. https://ittes.org.tr/dosyalar/files/IttesArsivi/2016/fulltext-proceeding-ittes2016.pdf.

Atav, E., Akkoyunlu, B., & Saglam, N. (2006). Ogretmen adaylarinin internete erisim olanaklari ve kullanim amaclari [Pre-service teachers' internet access facilities and their internet usage]. *Hacettepe University Journal of Education Faculty / Hacettepe Universitesi Egitim Fakultesi Dergisi, 30*(30), 37-44.

Birisci, S., Kul, U., Aksu, Z., Akaslan, D., & Celik, S. (2018). WEB 2.0 hizli icerik gelistirme oz-yeterlik algisini belirlemeye yonelik olcek (W2OYAO) gelistirme calismasi [A scale development study to determine web 2.0 practical content development self-efficacy belief (W2SEBS)]. *Educational Technology Theory and Practice / Egitim Teknolojisi Kuram ve Uygulama, 8*(1), 187-208. https:/doi.org/10.17943/etku.335164.

Brown, R. (2009). *Public relations and the social Web: How to use social media and Web 2.0 in communications*. Kogan Page Publishers.

Castells, M. (2011). *The rise of the network society: The information age: Economy, society, and culture (Vol. 1)*. John Wiley & Sons.

Collis, B., & Moonen, J. (2008). Web 2.0 tools and processes in higher education: Quality perspectives. *Educational Media International, 45*(2), 93-106.

Creswell, J.W., & Plano Clark, V.L. (2011). Designing and conducting mixed methods research. Sage Publications, Inc.

Direkci, B, Akbulut, S & Simsek, B. (2019). Turkce dersi ogretim programi (2018) ve ortaokul Turkce ders kitaplarinin dijital okuryazarlik becerileri baglaminda incelenmesi [The analysis of Turkish course curriculum (2018) and secondary school Turkish textbooks in terms of digital literacy skills]. *International Journal of Euroasian Researches/ Avrasya Uluslararasi Arastirmalar Dergisi ,7*(16), 797-813. https:/doi.org/10.33692/avrasyad.543868

Educational Information Network (2017). *Fatih etkilesimli icerik uretim araclari* [FATIH project interactive content production tools]. EBA. http://www.eba.gov.tr/fatihicerikgelistirmes.

Ekici, S., & Yilmaz, B. (2013). FATIH projesi uzerine bir degerlendirme [An evaluation on FATIH project]. *Turkish Librarianship / Turk Kutuphaneciligi, 27*(2), 317-339.

Elmas, R., & Geban, O. (2012). Web 2.0 tools for 21st century teachers. *International Online Journal of Educational Sciences, 4*(1), 243-254.

Horzum, M.B. (2010). Ogretmenlerin Web 2.0 araclarindan haberdarligi, kullanim siklikleri ve amaclarinin cesitli degiskenler acisindan incelenmesi [Investigating teachers' Web 2.0 tools awareness, frequency and purposes of usage in terms of different variables]. *Journal of Human Sciences / Uluslararasi Insan Bilimleri Dergisi, 7*(1), 603-634.

Korucu, A. T., & Cakir, H. (2015). Dinamik web teknolojileri ile gelistirilen isbirlikli ogrenme ortamini kullanan ogretmen adaylarinin gorusleri [The opinions of the teacher candidates using collaborative learning environment developed via dynamic web technologies]. *Adiyaman University Journal of Social Sciences / Adiyaman Universitesi Sosyal Bilimler Enstitusu Dergisi, 2015*(19), 221-254.

Korucu, A, & Karalar, H. (2017). Sinif ogretmenligi ogretim elemanlarinin Web 2.0 araclarina yonelik gorusleri [Basic education instructors' views on Web 2.0 tools]. *Trakya Journal of Education / Trakya Universitesi Egitim Fakultesi Dergisi, 7*(2), 456-474. https:/doi.org/10.24315/trkefd.304255.

Kul, U., Aksu, Z., & Birisci, S. (2019). The relationship between technological pedagogical content knowledge and Web 2.0 self-Efficacy beliefs. *Online Submission*, *11*(1), 198-213.

Kul, U., & Celik, S. (2018). Investigating changes in mathematics teachers' intentions regarding Web 2.0 technology integration. *Acta Didactica Napocensia, 11*(2), 89-104.

Ministry of National Education . (2012). *Egitimde FATIH projesi web sayfasi* [Movement of Enhancing Opportunities and Improving Technology project in education webpage]. MoNE. http://fatihprojesi.meb.gov.trs

Olkun, S., & Toluk, Z. (2003). *Ilkogretimde etkinlik temelli matematik ogretimi* [Activity based mathematics teaching in elementary education]. Ani.

O'Reilly, T. (2019, November 9). *What is web 2.0: Design patterns and business models for the next generation of software*. http://oreilly.com/web2/archive/what-is-web-20.html

Ozerbas, M. A., & Mart, O.A. (2017). Ingilizce ogretmen adaylarinin Web 2.0 kullanimina iliskin gorus ve kullanim duzeyleri [Pre-service english teachers' opinions and utilization levels on the use of Web 2.0]. *Kirsehir Journal of Education Faculty / Kirsehir Egitim Fakultesi Dergisi, 18*(3), 1152-1167.

Ozturk, M., & Akgun, O. E. (2012). Universite ogrencilerinin sosyal paylasim sitelerini kullanma amaclari, bu sitelerin olumlu-olumsuz etkileri ve egitimlerinde kullanilmasi ile ilgili gorusleri [University students' purposes in using social networking sites, and their opinions on using these sites in education]. *Sakarya University Journal of Education, 2*(3), 49-67.

Rosen, D., & Nelson, C. (2008). Web 2.0: A new generation of learners and education. *Computers in the Schools, 25*(3-4), 211-225.

Tatli, Z, Ipek Akbulut, H & Altinisik, D. (2016). The impact of Web 2.0 tools on pre-service teachers' self confidence levels about TPCK. *Turkish Journal of Computer and Mathematics Education (TURCOMAT), 7*(3), 659-678. https:/doi.org/10.16949/turkbilmat.277878

Yildirim, A., & Simsek, H. (2008). Nitel arastirma yontemleri [Qualitative research methods]. Seckin.

Yildirim, A., & Simsek, H. (2013). *Sosyal bilimlerde nitel arastirma yontemleri* [Qualitative research methods in the social sciences]. Seckin.