EXAMINATION OF SAMPLE COURSE DESIGN STUDIES PERFORMED BY PRE-SERVICE SOCIAL STUDIES TEACHERS BY USING DIGITAL TECHNOLOGIES

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ABSTRACT

The aim of this study is to examine the sample course design studies performed by pre-service social studies teachers by using digital technologies and to describe the opinions of pre-service teachers about this process. Design-based Research Model was used in the study. The study was conducted with 30 pre-service social studies teachers with criterion sampling technique. Data collection tools consisted of design documents, video recordings and interview forms. Descriptive analysis method was used for data analysis. Technological Pedagogical and Content Knowledge model was applied in the instructional process of the research. At the end of the 8-week instructional process, designs of pre-service teachers and their opinions about the process were obtained. In the research findings, course designs where pre-service teachers integrated their content knowledge and pedagogical knowledge with digital technologies, were acquired. Addition, all of the views of pre-service teachers on the process were found to be positive. In the context of these findings, it is concluded that technological pedagogical and content knowledge studies can be given with pre-service trainings. In this context, it is recommended to focus on pre-service training activities in future studies to be conducted and for any new researches, it is suggested to make longitudinal studies in order to monitor the effectiveness of this design model in real classroom environments.

Keywords: Design-based research, technology integration, social studies, pre-service teachers, digital education.

INTRODUCTION

The competency of teachers is important in the permanence of teaching and in designing an enriched learning environment. Because in addition to a teacher's content knowledge, the competencies explained by Shulman (1986) within the framework of pedagogical content knowledge are also important. According to the theory, teachers should have a deep content knowledge as well as pedagogical knowledge so that they can effectively teach their students. Because the ability to integrate the new technologies with content knowledge within the framework of pedagogical knowledge has become one of the most sought-after characteristics of teachers in this century. Because the 21st century teacher is expected to blend the content, pedagogical and technological knowledge correctly and share it with the students in the education process. "*Pedagogical content knowledge*", one of the three types of knowledge to be used in the integration process, is emphasized by the British pedagogue Shulman (1986). In the process of sharing knowledge with students, metaphors, reenactments, examples, explanations, concept explanations, presentations, and teaching methods used to formulate information and optimize it for the target audience to understand and pedagogical content knowledge with its techniques are effective in determining the expertise of teachers in their profession (Usak, 2005; Park & Oliver, 2008). In one aspect, the quality of teaching activities is closely related to teachers' level of teaching competencies within the context of pedagogical content knowledge (Moore, 2000). Another factor that determines the quality of learning environments is teachers' mastery of "*content knowledge*". It is important how much the teachers can achieve the specific objectives of the course they are responsible for. This situation increases the importance of the teacher's content knowledge. It is important that pre-service social studies teachers, who are the focus of this study, have at least undergraduate level expertise about the social science disciplines that constitute the subjects under the umbrella of the learning fields such as "Individual and Society," "Culture and Heritage," "People,

Places and Environments," "Science, Technology and Society," "Production, Distribution and Consumption," "Effective Citizenship" and "Global Connections" in the social studies curriculum (MoNE, 2018). Within the framework of their pedagogical skills, during an efficient education process, social studies teachers must teach about the important advantages of the 21st century such as *"life and career skills," "learning and innovation skills" and "knowledge, media and technology skills"*. Among these skills, in the context of digital literacy, which is under the category of "information, media and technology skills," there are the fields of information, media, information and communication technologies. Information literacy skills make it possible to gain effective and accurate access to information, to evaluate the information accessed and to use this information correctly. Media literacy is closely related to individuals' ability to correctly analyze Web 2. 0 and social media tools and to use them effectively in learning processes. On the other hand, "information and communication technologies literacy skills" express the ability to integrate technological tools such as computers, tablets, mobile phones into learning processes (Goksun & Kurt, 2018). In this context, a person who is digitally literate is expected to have the knowledge and skills related to ethical and legal processes in the process of using information in a creative way, selecting useful information from different sources, accessing and using information in the solution of problems (Partnership for 21st Century Learning, 2015; Trilling & Fadel, 2009). Therefore, digital technologies have an important function in this process, and teachers can use these tools in light of their *"technological knowledge".* Projectors and smart boards in classrooms and the internet available to be used in the educational context provide teachers with a digital door as they conduct the teaching process. Therefore, universities should improve their technological infrastructures in terms of mechanical and qualified academic staff and higher education institutions that train teachers should provide education to students in this direction (Kurt, 2013). Because technology has the role of creating more tools for the use of teachers and students, while the role of those responsible for teacher training is to train teachers who use technological tools correctly and appropriately (Koehler & Mishra, 2005). Because the fact that educational environments are enriched with the use of technology cannot be denied (Melia, et al., 2012; Mishra & Koehler, 2006). It is commonly known that technological tools have been around educational environments for a long time. Whereas, in the past, tools such as chalkboards, chalk, books, magazines, etc. existed in educational environments, with recent developments, internet and Web 2.0 technologies have been added to projectors, PowerPoint presentations, smart boards of today's classrooms. As a result of these developments, teachers can use applications such as Facebook, Blog, Wiki (Chou, 2011) as well as some digital applications built on Web 2.0 technologies. Some digital applications that today's teachers can easily adapt to many lessons (Benzer, 2017; Gununc, 2017; Esgi & Kocadag Unver, 2018; Kazanci & Donmez, 2013; Goksun & Kurt, 2018; Onal, 2018; Sahin, 2013; Tatli, 2017) are presented in categories in Table 1 with the help of related literature.

Table 1. *Digital applications that can be integrated with the courses in teacher education and MoNE*

CATEGORIES	WEB 2. 0 APPLICATIONS
Mind Map Applications	Wisemapping, Pooppet, SpiderScribe, Mindmeister, MindMaple Lite, Inspiration 9, Gocongr,Coggle,Mindomo
Dashboard Applications	Padlet, Blendspase, Lino it, Wordle, Bubble, RealtimeBord
Poster and Cartoon Creation Applications	Word Art, Canva, Make Beliefs Comix, Toondoo, Sketch toy, Face Your Manga
Story and Book Writing Applications	Pixton, Storyjumper, Storybord That, Storybird, Wattpad, Joomag.
Note Taking and Blogging Applications	Evernote, Trello, Blogger, Tlumblr, Glogster
Test and Puzzle Building Applications	Flippquiz, Puzzlemaker, Kahoot, Plickers, Quiziz, Socrative, mentimeter, LearningApss CrossWordLabs, Triventy.
Presentation and Animation Applications	Prezi, Powtoon, Buncee, Emaze, Vyond,Voki, Mine-Imator, Scracth.
Information Poster and Infographic Preparation Applications	Easelly, Visme, Piktochart, Venngage, Creately
Distance Education and Virtual Classroom Applications	Edmodo, Moodle, Classdojo, Remind, Beyaz Pano, Google Clasroom, Adobe Connect, Bigblubutton,EBA.
Virtual and Augmented Reality Applications	Aurasma, Quiver, Morfo, Augmented Reality (AR), Nearpod, Uzay 4 D, Animal 4D
Photography, Film and Video Editing and Design Applications	Thinglink, GIMPS, Mowi maker, Photostory, Safeshare, OpenShot, Filmora, Nimbb, Jing, SmartDraw, Vocaro, Davinci 15 Beta, AppInventor
Social Media Applications	Blog, Wiki, Youtube, Skype, Houngout, Whatsapp, Facebook, Instagram, WebQuest.

In new learning perspectives, educational environments have now shifted from a teacher-centered approach to a student-centered one. Web 2.0 applications, which are important tools of information and communication technologies in new instructional environments designed in line with constructivist approach, support the active and participatory role of the student in learning processes as well as the constructivist approach. Therefore, the use of Web 2.0 tools in educational processes is consistent with educators such as Vygotsky, Jean Piaget and Jerome Bruner, as well as educational theories such as problem-based learning, correlative learning, distributed cognition, cognitive flexibility theory, cognitive apprenticeship, situated learning, self-regulated learning (Gunduz, 2007).

Social Studies Curriculum and Digital Technologies

One of the most remarkable of the subjects that make up the eight titles of the Turkish Qualifications Framework (TQF) in the curricula is "*digital competence*". The competencies in the digital field, which should be emphasized in particular, are related to media, internet and social networks which have become integral parts of the individual in social life. Through the training given in the context of the program, it is observed that the basic skills such as access to information, the use of computers for the evaluation, storage, production, presentation and exchange of information, participation in common networks via the internet and communication are expected to be integrated with digital competence skills. This is supported by the specific objectives of the social studies curricula (MoNE, 2018). 27 skills that are aimed to be taught within the scope of Social Studies Course "*perception of change and continuity,*" "*digital literacy*" and "*media literacy*" again emphasize the importance of this issue. The description of one of the learning areas that constitute the backbone of the program, "*science, technology and society,*" emphasizes the importance of helping students gain an innovative and critical thinking perspective in social studies courses for the development of science and technology. In addition, students are expected to gain the ability to use technology consciously by seeing examples of the effects of science and technology on social life in this learning area. Therefore, it is important that teachers enrich their courses with activities that will feed digital competence in social studies teaching process. Additionally, organizing technology-assisted learning environments in indicates that the 21st century teacher has become technologically competent and productive (Goksun & Kurt, 2018). However, the literature shows that there are some problems that prevent the use of technology in the education process. It is indicated that there are external factors such as equipment, time and technical support, as well as internal factors such as belief, attitude, self-confidence, which prevent technology from inducing change in educational environments by being integrated into traditional learning as a single discipline (Ertmer, 2005, Mazman & Kocak-Usluel, 2011). This requires a profound reform of the initial teacher training process, and according to the United States Office of Technology Assessment (1995), the most immediate and effective solution to this problem is through pre-service teacher training (Hur et al., 2010). However, the quality of education provided in faculties of education may not always be the same. Because studies (Russell et al., 2003; Doering et al., 2003; Hew & Brush, 2007; Karuki & Duran, 2004; Pope et al., 2002) show that due to technology being taught as a single discipline rather than being integrated to courses, the Technological Pedagogical Content Knowledge (TPACK) skills of pre-service teachers do not fully develop. Moreover, in the study findings of Karuki and Duran (2004), it was stated that many faculties of education in the U.S. mostly focused on developing technological knowledge of pre-service teachers rather than integrating technology use into courses. Similarly, another study conducted abroad, (Russell et al., 2003) showed that a large number of new teachers used technology only in preparing syllabi instead of integrating technology into their fields and felt uncomfortable using classroom technology. Therefore, it is seen that pre-service teachers have difficulty in using technological knowledge in the teaching process due to the fact that technology is taught to them as a separate discipline without being integrated with field knowledge and pedagogical knowledge during pre-service teacher training (Doering et al., 2003; Hew & Brush, 2007; Pope et al., 2002). In some studies, pre-service teachers were observed to have problems not only in terms of integrating technology into their fields but also in using it. It is noted that these problems have various sources. For example, in some studies, it was concluded that pre-service teachers did not feel competent enough to use technology (Pamuk et al., 2012), and in others (Graham et al., 2009; Meric, 2014) it was concluded that pre-service teachers it was due to a lack of self-confidence and also related to their self-efficacy perceptions (Abbitt & Klett, 2007; Gomleksiz & Fidan, 2011). There are also studies

emphasizing that increasing the self-confidence of pre-service teachers in this context, depends on their getting technologically supported trainings (Brown & Warschauer, 2006; Lee et al., 2008). In addition to the studies conducted with pre-service teachers, in another study (Collis & Moonen 2008) where people working as teachers were the subject, it was stated that teachers were reluctant to use technology because they did not have sufficient equipment to integrate technology with their fields. Therefore, no movements of innovation in the field of education will be successful unless they are well understood and internalized by teachers (Baki, 2002). Therefore, in order to solve the problem in question, it becomes clear that it is necessary to teach how technology should be integrated with the courses in education faculties first.

Significance of the Research

Digital learning materials have an important role not only to enrich educational environments but also enable students from all around the world to reach the information from their home. Especially, along with the spread of recent COVID-19 pandemic across the world, the importance of distance education is heavily recognized. Because of the pandemic, many countries had to switch distance education which requires the use of digital learning materials and skills to use these materials. However, as seen in the literature of this research, it was found that teachers and pre-service teachers had problems in the process of integrating technology and their pedagogical knowledge. Researches have shown that the reason for these problems arise from the fact that technology is taught to pre-service teachers as a separate discipline. In this context, the healthy integration of digital technologies in the teaching process depends on informing and empowering today's teachers. However, this cannot be a solution on its own. One of the parts of a permanent solution requires delving into the source of the problem, meaning the process of teacher training. In this respect, it is necessary to increase the quality of teaching in terms of the practical use of digital technologies in the faculties of education. In this regard, the "*Digital Transformation in Higher Education*" project created by Anadolu University and Council of Higher Education of Turkey (YOK) is currently being implemented in certain universities and these ongoing projects need to be supported by other universities as well. In this respect, it is important that pre-service teachers become more competent by having their related courses integrated with digital technologies during their education processes. The significance of integrating technology to the educational environment is also reflected by Ministry of National Education's (MEB) Vision 2023 plan and 21st century learning skills (Bozkurt, 2019).

Therefore, this study, which aims to design and implement a course integrated with digital technologies with pre-service teachers, will contribute both to the 21st century's educational needs and the field.

Purpose

The purpose of this study is to examine the sample course design studies conducted by pre-service social studies teachers using digital technologies and to describe their opinions about this process. The research questions created in this context are as follows:

1. How did pre-service social studies teachers design a course in the process of designing a sample course with digital technologies?
2. What is the distribution of the content prepared by pre-service teachers in the process of designing a sample course with digital technologies in terms of grade, learning area, digital application and activities/techniques used?
3. Which digital applications have pre-service social studies teachers used in the process of designing a sample course with digital technologies?
4. What are the opinions of pre-service social studies teachers about the process of designing a sample course with digital technologies?

METHOD

Research Model

Design-based Research Model was used in this study. Design-based research is a method that emerged from the need of formative research regarding theoretical education designs (Cobb et al., 2003; Collins et al., 2004) and the need to take the interaction of design, theory, and application trio to the next level. Design-based research was first put forward by Brown (1992) and Collins (1992) with the name of design experiments. Design experiments are known as a research method which includes scientific processes such as discovery, disclosure, verification and dissemination and active participation of the researcher in instruction-learning activities (Kelly, 2003). In design-based research, the researcher conducts the research with the participants and is an important part of the research process (Cobb et al., 2003). The researcher systematically designs and implements interventions, reviews and develops the initial design according to the results of the application and reapplies it. The researcher continues this process cyclically until he/she thinks that the application made from a pragmatist perspective is sufficiently developed. In this respect, it is possible to design and develop products in three different types with the design-based research method (Design-Based Research Collective, 2003). These types are; developing innovative learning environments, developing new classroom practices and developing new learning theories. In addition, it is possible to develop an innovation, product or theory at the end of the design-based research process. Levin and O'Donnell (1999) state that the fact that most of the research methods commonly used in educational research fall short of producing convincing experimental evidence causes loss of trust in educational research. In this context, design-based research method is seen as a positive effort in eliminating this loss of trust in educational research (Levin & O'Donnell, 1999). However, the application steps of design-based research are not as clear as quantitative research. Depending on the context, the research processes can vary greatly. However, the general path to follow is; first, the designer develops and implements the initial version of his/her design. Then, he/she looks at how the design works in practice. As a result of the experience gained from the implementation, the designer regularly reviews the design and makes corrections. The design becomes solid, error-free and productive over time. Finally, the research report is written. A design-based research is made up of holistic systems and change in one part can affect the whole and other parts of the whole (Brown & Campione, 1996). Therefore, the evaluation of designs is a continuous process and as the design changes, the evaluation process changes along with it. Design-based research, which requires a dynamic process to achieve a positive goal, is similar to action research in this respect. However, while the aim of action research is to solve a problem, in design-based research, this aim turns into designing and implementing a product.

Study Group

Participants of the study were selected by using criterion sampling technique from among the purposive sampling methods. 30 pre-service social studies teachers, who were taking the "Special Teaching Methods I" course in the spring term of the 2018-2019 academic year, were selected for the study based on purposive sampling methods. Criteria for selection of participants were; to be in a group where a course is designed with digital technologies in the context of pedagogical and content knowledge, to have taken courses such as Teaching Principles and Methods, Computer or Information Technologies, Instructional Technology and Material Design in addition to courses such as History, Geography, Philosophy, Sociology. In addition, volunteering of all participating pre-service teachers constitutes another criterion of the study.

Design Process

The objective of this study is to design and implement a social studies course integrated with digital technologies. In line with this objective, the researcher provided 4 weeks of theoretical training to the participants. The researcher has an important role in the process of giving trainings. Being an expert in the field of media/social media literacy and having work experience and publications related to the use of digital technologies and Web 2.0 tools in educational processes, helped the researcher identify and manage the tools to be used in the educational process. An 8-week implementation time was set for the presentation of the design studies. The groups of at least 2 and 4 people, which the researcher formed during the theoretical

training, started to work on a sample social studies course project that they would integrate with digital technologies towards the end of the theoretical training. The drafts were implemented in a classroom environment and evaluated in terms of their usefulness. Angeli and Valanides (2009) emphasize the fact that teaching models and applications aiming at gaining the necessary knowledge and skills for technology assisted instruction include real learning environments and in-class applications. However, due to the fact that the participants of this study were 3rd Grade university students, they did not have the opportunity to use the courses they designed in a real classroom environment. Alternatively, they created in their own classrooms an environment similar to a real classroom and applied their courses there. The researcher gave the groups feedback for the resulting course designs each week and motivated them. Since the designs would be evaluated in their entirety, different variables in addition to the products of the groups were considered in the evaluation of group success. Collins et al. (2004) assert that there are points of consideration for evaluating a design, which are cognitive, interpersonal, group/grade, resource, institution or school levels. In the method used in this study, the aforementioned levels were considered as follows:

Cognitive Level

At this level, the course design activities, the processes of teaching the designed course and reflective thoughts about the process of pre-service social studies teachers were determined. At the same time, the groups were videotaped while presenting and then the students tried to reflect on their work by watching the videos.

Interpersonal Level

Pre-service social studies teachers carried out a course design study using digital materials as part of a group. A total of 8 groups carried out studies. Each group shared their work step by step with the instructor and received correctional feedback. During the process, pre-service teachers were encouraged to collaborate both within and between groups. Jigsaw technique was used in the process. As a matter of fact, in the majority of technology based instructional design models, collaborative learning approach is applied in which pre-service teachers work in groups (Lu et all., 2011; So & Kim, 2009). The feedback-corrections given to the groups who made their presentations in the classroom environment were instructive in terms of other groups not repeating the same mistakes.

Group or Grade Level

Pre-service social studies teachers tried to create an environment similar to a real middle school classroom in their courses designed with digital materials. In this process, other pre-service teachers in the classroom supported the groups that presented their studies by playing the role of secondary school students. Each group made sacrifices for its success and there were certain roles assigned within the groups. In addition, the groups who were more successful in designing their products collaborated with the members of other groups and then returned to their own groups.

Resource Level

In this process, digital applications (Kahoot, Triventy, Canva, Powton, etc.) where teacher candidates would prepare digital materials were introduced and the steps to use them were shared with the pre-service teachers. The pre-service teachers were notified that these resources could be used for free or by paying, with or without a set period of use. They were then asked to design their courses while keeping that information in mind.

Institution or School Level

In the faculties of education where the implementations took place, the managers of the institutions supported the process. Especially, the maintenance, repair and internet connection problems of smart boards were tried to be solved. In addition, the instructor was given the responsibility of "Instructional Technologies and Material Design Exhibition" at the end of the year due to the use of an innovative educational model in

the faculty, thus providing both motivation and moral support. In short, the characteristics of the teaching model applied in this research can be summarized in four main steps. These steps, which form a cyclic whole, are presented in Figure 1.
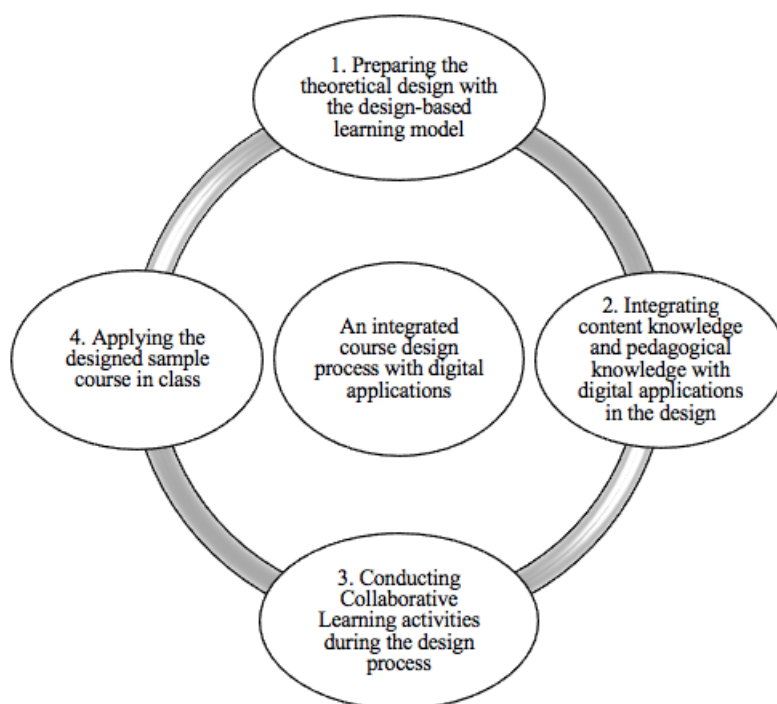

Figure 1. A representative module of the steps performed within the scope of the teaching model used in the research

Data Collection Process

The data collection process of the research was carried out according to the design-based learning method. The researcher shared information with the pre-service teachers during the 4-week period of a semester. In this period, teaching methods and techniques that pre-service teachers would use in social studies education were discussed. Additionally, it was stated that pre-service teachers would design a social studies course with digital technologies within the framework of pedagogical and content knowledge. In this process, the pre-service teachers were allowed to choose the level of social studies course, learning area, teaching technique and digital applications to be used. In addition, the form containing the digital applications discussed in the theoretical part of the course (presented in Table 1) was given to them by the researcher, and they were given the opportunity to choose the application appropriate for their designs. The researcher gave a few examples of how to use the digital applications from the form for social studies courses, used them on a smart board step by step and helped the pre-service teachers to use them. The part of the study based on group practices lasted 8 weeks. Each group presented their lessons in a classroom environment and were videotaped and watched themselves again. Also, while the groups introduced their applications, other pre-service teachers in the class acquired more information regarding different digital applications each week. In order to enable each group member to work actively in the process, 4 course designs were requested from each group. The processes to be carried out by the groups in the design process consisted of 4 stages and they were:

- *Preparing the theoretical design with Design-based Learning model:* Pre-service teachers are asked to review the learning areas, subjects and digital applications that they already knew about and which were included in the social studies curriculum.
- *Integrating content knowledge and pedagogical knowledge into digital applications in design:* By synthesizing their knowledge and skills in social studies learning areas, teaching techniques and digital applications. They form the infrastructure of the sample course.

- *Conducting Collaborative Learning activities in the design process:* In this step, pre-service social studies teachers work in group and inter-group collaboration with their friends. Each group member plays an active role in the process to partake in the learning and teaching of the design process.
- *Application of the designed sample course in the classroom:* Pre-service teachers conduct the social studies course designed with digital technologies in an environment similar to a real secondary school classroom. Their classmates take on the role of middle school students and they act as teachers themselves. Then, they redevelop their designs according to the feedback-corrections from the researcher. In addition, the activities in this step are videotaped.

Data Collection Tools

Documents for Developing a Social Studies Course with Digital Applications

A form for designing a Social Studies Course with digital materials was prepared by the researcher beforehand. In this form, the parts regarding classroom level, learning area, teaching techniques to be used and digital materials to be used were left blank for the pre-service teachers to fill in. The pre-service teachers filled in the relevant parts of this form and submitted it to the researcher before creating their designs. Two experts were consulted for the suitability of the form.

Participant (Pre-service Teacher) Opinions

One of the data collection tools of this study is the interview technique. Interview technique can be used as the main data source of the research as well as with other data collection techniques such as participant observation and document collection. Such use of interviews also enables the verification of the data obtained through observation and document analysis and the creation of alternative explanations for the data (Buyukozturk et al., 2008; Glesne, 2013). In this study, data were collected from pre-service teachers through a semi-structured interview form to describe their opinions on the process. Collecting data from the participants through interview method allows the control of the data obtained through observation and document analysis from the participants' perspectives and can contribute positively to the reliability and validity of the research (Merriam, 2013).

Observation (Video Recordings)

Observation is considered to be one of the most important ways to obtain this data (Merriam, 2013). Keeping field notes to obtain useful data from observations made during the research process (Mayring, 2011), is also common practice in addition to recording audio and video in the environment where the observation takes place (Merriam, 2013; Yildirim & Simsek, 2013). During this research, sample social studies courses designed by a different group each week were recorded with a video recorder including audio recording. It is known that video recording of the observations contributes to the credibility of the research as well.

Analysis of the Data

The documents, interview data and video recordings collected during this research were examined by descriptive analysis method. Descriptive analysis is the interpretation and summarization of previously collected data under certain themes or titles (Altunisik et al., 2007; Yildirim & Simsek, 2013). In this study, the researcher firstly formed a framework by bringing together the written, visual and audio products collected from each pre-service teacher under a code (P1, P2...) assigned to each respective teacher. Then, these data were examined, and themes were created. In addition to the excerpts from the documents of the pre-service teachers related to each theme, statistical values of how many pre-service teachers used each theme are presented. In brief, there are four steps of descriptive analysis; creating the framework, processing data according to the thematic framework, identifying and interpreting the findings. In this study, the findings presented with different themes by each group were supported with video recordings in order to increase the credibility of the research.

Reliability and Validity

For the validity and reliability studies of this research, the preparation of data collection tools, data collection process, data analysis and recording processes were carried out very carefully. In the process of preparing the data collection tools, in addition to two field experts, a Turkish teacher was also consulted in order to determine the language suitability of the data collection tools. Participants were selected on a voluntary basis. The participants were also informed that they could leave the study process (participation in the research, data collection, video recording, broadcasting on YouTube) at any time. In order to increase the credibility of the research, the application of the designed courses was recorded on video and these data were also shared on social media (Turkan Hoca Dijital Materyal Egitimi, 2019). No financial gain was sought from this social media channel and only the work done for the integration of digital technologies was shared with other stakeholders and colleagues throughout the education process. Signed permission was obtained from the pre-service teachers to share their videos and they were informed that their videos could be removed if they wanted at any time. Necessary information regarding the work and the procedures was given to the authorities of the institutions and permissions were obtained.

FINDINGS

How did Pre-service Social Studies Teachers Design Sample Social Studies Courses with Digital Technologies?

Table 1. How are the samples designs made by pre-service social studies teachers with digital technologies?

P	DIGITAL APPLICATIONS (TK)	ACTIVITIES AND TECHNIQUES USED (PK)	SOCIAL STUDIES LEARNING AREA (CK)
1st. Group			
P1 (URL-2)	Buncee, Thinglink, Popplet, Goconr	More Tomorrow, Get the Flag Answer the Question	5th Grade People, Places and Environments
P2	Neaorpod, Popplet, Quiziz Wondershare filmora	Market Place Technique, Draw and Find Technique, Assemble Parts	5th Grade Global Connections
P3	Goconqr, Powtoon, Storyjumper, Triventy	Quick Round, Knock Over and Win	5th Grade Culture and Heritage
P4	Neorpad Aurasma Learning apps	Station, Build and Solve	5th Grade Production, Distribution and Consumption
2nd. Group			
P5 (URL-3)	Emaze Go animate, Learningsapps	Question Round, Take a Hint	5th Grade People, Places and Environments
P6	Goanimate Thinglink, Mentimeter	Remember and Win, Quick Round	5th Grade Science, Technology and Society
P7	Movie maker, Easelly Crooswordlabs	Collect Points, Aquarium	6th Grade Culture and Heritage
P8 (URL-4)	Thinglink Aurasma Socrative	True or False? What Does It Have?	6th Grade People, Places and Environments
3rd. Group			
P9 (URL-5)	Mindomo, Triventy	Everybody Is a Teacher Here, Cast a Line Get the Question	5th Grade People, Places and Environments
P10 (URL-6)	Padlet,Storyjumper,Aurasma, Goanimate, Safeshare, Learningapps	Come Out Come Out Wherever You Are, Hit the Dart Answer the Question	6th Grade Culture and Heritage
P11 (URL-7)	Thinglink, Flipguiz, Prezi	Court, Gossip	5th Grade Active Citizenship
P12	Canva, Word Art, Kahoot	Card Matching, Be Quick and Win	5th Grade Science, Technology and Society

4th. Group			
P13	Canva, Thinglink, Go animate, Mentimeter	Idea Scan, Wheel of Fortune, Get Your Bearings	5th Grade Global Connections
P14	Classdojo, Powtoon, Storyjumper, Learningapps, Lino-it, Quizizz	Role Playing, Playing Tag	7th Grade Culture and Heritage
P15	Powtoon, Storyjumper Flipguiz	Information Pouch, Listing	5th Grade Active Citizenship
P16	Lino it, Plickers	Station, Basket of Apples	7th Grade Production, Distribution and Consumption
5th. Group			
P17 (URL-8)	Emaze, Thinglink, Toondoo, Mentimeter	More Tomorrow, Guess and Find Me	5th Grade Global Connections
P18	Prezi, Mentimeter, Thinglink	Analogy (Metaphor), Ring a Ring o' Roses	5th Grade People, Places and Environments
P19	Wisemapping, Emaze, Learning Apps, Padlet-Socrative	True or False, Alternating Learning	7th Grade Science, Technology and Society
P20	Kahoot, Wordle	Flashcards, Listing	5th Grade Active Citizenship
6th. Group			
P21	Amaze, Quzizz, Wisemapping, Crossword Laps	Flashcards, Come Out Come Out Wherever You Are	6th Grade Global Connections
P22	Learning Apps, Goanimate, Easelly	Quick Round, Hourglass	7th Grade Production, Distribution and Consumption
P23	Mindmeister, Canva, Blendspace, Quizizz	Court, Race Against Time	6th Grade Active Citizenship
P24	Quiziz, Emaze, Mindmeister	Hourglass, True or False?	5th Grade Culture and Heritage
7th. Group			
P25	Blendspace, Powtoon, Quizizz	Roller, Role Playing	6th Grade People, Places and Environments
P26	Emaze, Socrative, Bubbl	Speaking Circle, Who Does It?	7th Grade Culture and Heritage
P27	Voki, Flipguiz, Thinglink	Card Matching, Burst the Bubble See the Answer	5th Grade Culture and Heritage
P28	Voki, Canva, Kahoot	Treasure Hunt, Questions and Answers	5th Grade Individual and Society
8th. Group			
P29	Emaze, Voki, Quizizz	Drama, The Stranger Next to Me	6th Grade Active Citizenship
P30	Neopad, Mentimeter, Pooplet	Six Shoes, Argumentation	7th Grade Global Connections

When Table 1 is examined, it is observed that each group designed and presented 4 sample social studies courses. It is seen that both individual products and common group products have emerged during the group work. It is evident in this finding that, particularly in collaborative studies, balanced work takes place within the groups, which is important for preventing unfairness within groups. Because there are four people in each group, it is noteworthy that the four courses designed together are each presented by a single group member. The fact that pre-service teachers apply teaching techniques in social studies courses where they use digital applications in the context of class level and learning areas in the social studies curriculum, also draws attention. In addition to the teaching techniques (e.g. come out come out wherever you are, quick round, hourglass) in the literature, it was observed that pre-service teachers also used instructional activities they created themselves (the stranger next to me, hit the dart answer the question, cast a line get the question). When the videos of pre-service teachers about the social studies course designed with digital technologies are examined, it is observed that the designs created are also suitable for constructivist understanding and student participation.

What Is the Distribution of the Content Prepared by Pre-service Teachers in the Process of Designing a Sample Course with Digital Technologies in Terms of Grade, Learning Area, Digital Application and Activities/Techniques Used?

Table 2. Distribution of the designed courses in terms of grade level, learning area, digital applications and techniques used

Grade	Learning Area	f	Which Digital Applications Are Used in This Field	What Are the Learning Techniques Used?
5,6,7	Culture and Heritage	7	**Storyjumper (3)**, Powtoon (2), Quizizz (2), Emaze (2), Triventy (1), Movie Maker (1), Easelly (1), Crooswordlabs (1) Goconqr (1), Padlet (1), Aurasma (1), Goanimate (1), Safeshare (1), Learningapps (2), Classdojo (1), Lino It (1), Mindmeister (1), Socrative (1), Bubble (1), Voki (1), Flipquiz (1), Thinglink (1)	Quick Round (1), Knock Over and Win (1), Collect Points (1), Aquarium (1), Role Playing (1), Playing Tag (1), Hourglass (1), True or False? (1), Speaking Circle (1), Who Does It (1), Card Matching (1), Burst the Bubble See the Answer (1)
5,6	People, Places and Environments	6	**Thinglink (2)** Buncee (1), Popplet (1), Goconr (1), Emaze (1), Go Animate (1) Learningsapps (1), Mindomo (1), Triventy (1), Prezi (1), Mentimeter (1), Blendspace (1), Powtoon (1), Quizizz (1)	More Tomorrow (1), Get the Flag Answer the Question (1), Question Round (1), Take a Hint (1), True or False? (1) What Does It Have? (1) Everybody Is a Teacher Here (1), Cast a Line Get the Question (1), Analogy (Metaphor) (1), Ring a Ring o' Roses (1), Roller (1), Role Playing (1)
5,6,7	Global Connections	5	**Mentimeter (3)**, Neaorpod (2), Popplet (2), Quizizz (2), Thinglink (2), Emaze (2), Wondershare Filmora (1), Canva (1), Go Animate (1), Toondoo (1), Wisemapping (1), Crossword Laps (1)	Idea Scan (1), Wheel of Fortune (1), Get Your Bearings (1), More Tomorrow (1), Guess and Find Me (1), Flashcards (1), Come Out Come Out Wherever You Are (1)
5,6	Active Citizenship	5	**Quizizz (3)**, Flipquiz (2), Prezi (1), Powtoon (1), Storyjumper (1), Kahoot (1) Wordle (1), Mindmeister (1), Canva (1), Blendspace (1), Emaze (1), Voki (1) Thinglink (1)	Court (2), Gossip (1), Information Pouch (1), Listing (1), Flashcards (1), Race Against Time (1), Drama (1), The Stranger Next to Me (1)
5,7	Science, Technology and Society	3	Goanimate (1), Thinglink (1), Mentimeter (1), Canva (1), Word Art (1), Kahoot (1), Wisemapping (1), Emaze (1), Learning Apps (1), Padlet (1), Socrative (1)	Remember and Win (1), Quick Round (1), Card Matching (1), Be Quick and Win (1), True or False (1), Alternating Learning (1)
5,7	Production, Distribution and Consumption	3	**Learning Apps (2)**, Neorpad (1), Aurasma (1), Lino It (1), Plickers (1), Goanimate (1), Easelly (1)	Station (2), Build and Solve (1) Basket of Apples (1), Quick Round (1), Hourglass (1)
5	Individual and Society	1	Voki (1), Canva (1), Kahoot (1)	Treasure Hunt (1), Questions and Answers (1)

When Table 2 is examined, it is seen that the learning area the participants prepared the most content for during the process of integrating their technological pedagogical content knowledge in the social studies course was the "*Culture and Heritage*" (7) learning area. In this area of learning, content was prepared for 5th, 6th, and 7th Grade levels. Similarly, in the "global connections" learning area, technological, pedagogical and content knowledge studies have been carried out extensively for the 5th, 6th and 7th Grades. The most frequently preferred digital applications for course integration in terms of specific learning areas were as follows; a digital storytelling app called "*Storyjumper*" (3) for the Culture and Heritage learning area, *Thinglink* "(2), for the People, Places and Environments learning area, "*Mentimeter*" (3), for the Global Connections learning area, "*Quiziz*" (3), for the Active Citizenship learning area and finally, "*Learning Apps*" (2), for the Production Distribution and Consumption learning area. However, it was observed that for the Individual and Society and Science, Technology and Society learning areas, different applications were used only once. In the pre-service teachers' preferences of using instructional techniques, there were no repeated techniques other than "Court" (2) and "Station" (2) techniques. This finding shows that social studies teachers produce different contents within the scope of their creativity. In addition, pre-service teachers also created some activities such as "*Knock Over and Win, Collect Points, Playing Tag, Burst the Bubble See the Answer, Take a Hint, Cast a Line Get the Question*" themselves.

Which Digital Applications Did Pre-service Social Studies Teachers Used in the Process of Designing A Sample Course with Digital Technologies?

Table 3. Digital applications mainly used in the process of designing a sample course with digital technologies

Digital applications used	f	Digital applications used	f
Thinglink	8	Blendspace	2
Quiziz	7	Easelly	2
Emaze	7	Crooswordlabs	2
Learning Apps	6	Prezzi	2
Go animate (Vyond)	5	Wisemapping	2
Mentimeter	5	Lino-it,	2
Powtoon,	4	Triventy	2
Storyjumper	4	Padlet	2
Canva	4	Movie maker	1
Popplet,	3	Mindomo	1
Neaorpod	3	Buncee	1
Aurasma	3	Safeshare	1
Socrative	3	Word art	1
Voki	3	Classdojo	1
Kahoot	3	Plickers	1
Flipguiz	3	Toondoo	1
Goconqr	2	Wordle	1
Mindmeister	2	Bubbl	1
		Wondershare filmora	1

Pre-service social studies teachers have integrated a total of 37 digital applications into the social studies course content process. Among the applications used, "*Thinglink*" was the app used the most used in the social studies learning areas. With Thinglink, you can place icons on the images in your presentation and add content such as audio, video, music, pictures, etc. on them. Presentations are usually more interesting and student-engaging activities. For example, by embedding videos on the pictures of touristic areas in certain regions on a tourism map of Turkey, you can satisfy the curiosity of the students by appealing more to the senses. In this respect, it can be said that pre-service teachers focused on practices that facilitate student participation in the process. Other digital applications that pre-service teachers preferred most during the preparation of social studies course content were; *Quiziz, Emaze, Learning Apps, Go animate and Mentimeter*. Digital applications integrated with social studies courses by only one pre-service teacher were as follows; virtual classroom application: Classdojo, presentation and animation applications: Buncee and Toondoo, Word building applications: Wordle, Bubbl, Word art, Test and puzzle building applications: Plickers, Mind map applications: Mindomo and film-video editing applications: *Movie maker, Safeshare* and *Wondershare filmora* respectively.

What Are the Opinions of Pre-service Social Studies Teachers about the Integration of Pedagogical and Content Knowledge with Digital Technologies?

Table 4. Opinions of pre-service social studies teachers about their contribution to professional competence

	Opinions of pre-service teachers	Participants	f
Professional Competence Theme	Being able to integrate digital technologies with content knowledge within the framework of pedagogical knowledge	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P13, P14, P15, P18, P20, P21, P23, P24, P25, P26, P28, P29, P30	23
	Increased knowledge and skills about digital applications over time	P1, P3, P5, P8, P11, P12, P15, P16, P17, P19, P22, P23, P28	13
	Regarding the use of technology, gaining a positive attitude	P1, P7, P23, P25, P26	5
	Increasing curiosity about technology	P17, P29, P30	3
	Feeling oneself at a level that can help others	P18, P27, P28	3
	Improving self-confidence about using digital applications in social studies	P4, P17	2
	Considering oneself to be different from the classical teacher model	P4, P6,	2
	Being able to use applications that most people don't know about in class is very pleasing	P12, P17	2
	Destruction of prejudice against technology	P15, P29	2
	Considering oneself to be one of the best in the class to integrate digital applications with social studies	P10	1
	Thinking that the process of integration into social studies increases creativity as well	P6	1
	Gaining the ability to use technological tools in a more controlled and purposeful manner	P15	1
	Finding the opportunity to discover new features and aspects of oneself in the process	P25	1

Even though I had no knowledge and interest in using the applications in social studies at the beginning of this course, I am now one of the most effective people in using applications in social studies (P10).

There was an improvement in my ability to visualize and integrate knowledge into the course. I used virtual classes such as Edmodo and Classdojo in social studies and gained competence in observing students and class management (P14).

Before I started to use these applications in social studies, I had difficulty even using computers. Now I can easily use these applications in social studies. In the process of integrating these practices, I began to realize my abilities and interests that I had not noticed before (P25).

Table 5. Opinions of pre-service social studies teachers about their contributions to social studies course

	Opinions of pre-service teachers	Participants	f
Theme of Contributions to Social Studies Course	The opinion that digital applications make social studies a more fun course	P1, P3, P8, P25, P26, P20	6
	Students in social studies course become more active with digital applications	P3, P11,	2
	Opportunity to interact with students in virtual classes at any time	P1, P14,	2
	The opinion that learnings of social studies become more permanent with the use of applications	P2, P12,	2
	The opinion that social studies are prevented from becoming monotonous with digital applications	P1,	1
	Contribution to the effective teaching of social studies course	P8	1
	In the social studies course, digital applications are thought to be useful	P13	1
	The opinion that courses designed in this model support collaborative learning studies as well	P14	1
	Saving time with digital applications	P15	1

If we want to teach the subjects effectively in the social studies course and have the students participate more, we need to use digital applications. The course becomes even more fun with these applications (P8).

Teaching the course with digital applications will make the learnings of students more permanent. Integrating courses with digital applications instead of just plain talking is important for ensuring that the courses are not boring and that they facilitate student participation (P12).

I have seen that using digital applications in social studies courses saves time. In this way, I can share my presentations and animations with the class in a more practical and fun way (P15).

I realized that there are digital applications that enable my students to work effectively as a team in social studies course. (P14).

Table 6. Opinions on the implementation of the applications in the future during their professional lives

	Opinions of pre-service teachers	Participants	f
The Theme Regarding the Process in the Future	Regarding the future, the idea of wanting to use the applications more effectively and productively while teaching	P5, P7, P11, P13, P21, P24, P26	7
	Regarding the teaching practice, thinking about which digital applications to integrate with social studies.	P4, P12,	2
	Regarding the future, belief that social studies course will be more fun to teach with digital applications	P11, P19	2
	The opinion that it will be professionally beneficial for oneself	P26, P28	2
	Regarding the future, the idea of becoming a social studies teacher who makes children enjoy technology	P10	1
	The opinion that digital applications will motivate students	P1	1
	The opinion that with this model, it will be easier to stimulate more senses in the students	P14	1
	The opinion that this way students will participate more in class	P19	1
	The idea of closely following technological developments in the future and using them in class	P25	1
	The belief that the fear of taking tests that students experience will be eased with digital games	P1	1

In the future, I will try to use digital applications more and strive to produce richer content (P19).

When we use these applications in class, our lessons become more fun. When we become teachers, I believe that when we use these applications while teaching with our students, they will have more fun while learning (P5).

I think I'll benefit from using digital applications that fit my course subjects when I'm a teacher in the future (P26).

I can easily draw the attention of my students in the future by blending social studies with digital applications. This will allow my students to see the positive aspects of technology. I also think I'll keep track of the work my students do outside the classroom with virtual classroom applications. I'm planning to help my students get rid of their test anxiety with digital evaluation applications such as digital Kahoot, Quizziz and Triventy and make learning more fun for them (P1).

DISCUSSION AND CONCLUSION

Teacher competencies are important for improving the quality of teaching in educational environments. Because teachers who are competent and qualified are the ones responsible for teaching the 21st century knowledge and skills to students in a healthy way. Since one of the competencies that must to be taught to the students as part of curricula is "*digital competence*", teachers are required to have this skill themselves in the first place and a competent teacher must have the ability to integrate the content knowledge and pedagogical knowledge with digital technologies. The aim of this study is to examine the sample course design studies conducted by pre-service social studies teachers using digital technologies and to describe their opinions about this process. In this context, according to the first question of the research, "How did pre-service social studies teachers design a course in the process of creating a sample course with digital technologies?" it was concluded that each group of pre-service social studies teachers designed a sample social studies course by integrating their content and pedagogical knowledge with digital applications. In relation to this finding of the research, the resulting collaborative work done by pre-service teachers in the process of designing a technology-supported course is consistent with certain other studies (Lu et al., 2011; So & Kim, 2009) as well. Both individual products and common group products were created during the group work. This development prevents the unfair gain which is one of the limitations of the collaborative works. It is also worth pointing out that pre-service teachers applied teaching techniques in social studies courses in the process. In addition to the teaching techniques (e.g. come out come out wherever you are, quick round, hourglass) in the literature, it was observed that pre-service teachers also used instructional activities they created themselves (the stranger next to me, hit the dart answer the question, cast a line get the question) and used their creativity. When the videos of pre-service teachers about the sample social studies course designed with digital technologies were examined, it was concluded that the designs created coincided with the constructivist understanding and student participation as well. The ability of pre-service teachers to design content knowledge and digital applications in such a way to be able to teach them in a classroom environment depends on the soundness of their pedagogical knowledge. Because the use of appropriate teaching methods and techniques for optimizing the knowledge, skills and approach to be gained by the target audience in the process of teaching is related to the pedagogical knowledge that increases the quality of teaching activities (Usak, 2005; Park & Oliver, 2008; Moore, 2000). In the research *"What is the distribution of the content prepared by the pre-service social studies teachers in the process of designing a sample course with digital technologies in terms of grade level, learning area, digital applications and techniques?"* was another point of question.

In the findings related to the second question of the research the learning area the participants prepared the most content for during the process of integrating their technological pedagogical content knowledge in the social studies course was seen to be the "*Culture and Heritage*" (7) learning area. In this area of learning, content was prepared for 5th, 6th, and 7th Grade levels. When the content of culture and heritage learning area is examined, it is seen that it mostly includes historical and cultural issues related to past experiences. Pre-service teachers may have preferred to use this learning field more because they thought about how they could make the lessons more concrete when dealing with historical and cultural issues when they became teachers. Similarly, in the "Global Connections" learning area, technological, pedagogical and content knowledge studies have been carried out extensively for the 5th, 6th, 7th Grades. Again, as the learning area of global connections can be a bit more difficult to teach by simplifying the subjects of international political, economic and cultural relations for the students, teachers may have chosen this field by thinking that this problem can be overcome with digital technologies.

Another interesting finding was the variability in the preferences of pre-service teachers regarding instructional techniques. This finding shows that social studies teachers produce different contents within the scope of

their creativity. In addition, the creativity of the pre-service teachers also developed during this process as evidenced by the activities such as *knock over and win, collect points, playing tag, burst the bubble see the answer, take a hint, cast a line get the question,* that they created themselves. Findings related to *"Digital technologies extensively used by pre-service social studies teachers in designing sample courses with digital technologies"* show that pre-service social studies teachers tried to integrate 37 digital applications into social studies course content process. Among the applications, *"Thinglink"* (f-8) was the most widely used application in social studies learning areas. Via Thinglink, you can place icons on the images in your presentation and add content such as audio, video, music, pictures, etc. on them. Presentations are usually more interesting and student-engaging activities. In this respect, it can be said that pre-service teachers focused on practices that facilitate student participation in the process. The result is in parallel with the idea that technology enriches the educational environment (Melia et al., 2012; Mishra and Koehler, 2006).

Other digital applications that pre-service teachers preferred most during the preparation of social studies course content were; *Quiziz, Emaze, Learning Apps, Go animate and Mentimeter.* Digital applications integrated with social studies courses by only one pre-service teacher were as follows; virtual classroom application: Classdojo, presentation and animation applications: Buncee and Toondoo, Word building applications: Wordle, Bubbl, Word art, Test and puzzle building applications: Plickers, Mind map applications: Mindomo and film-video editing applications: *Movie maker, Safeshare and Wondershare Filmora* respectively. The finding related to the question of *"What are the opinions of pre-service social studies teachers about the process of designing a sample course with digital technologies?"* was also acquired in the research. As a result of the data obtained from the opinions of pre-service teachers on this subject three themes of *"contribution to their professional competence," "contribution to social studies course," "implementation in the future professional life"* and opinions within the context of these themes were acquired. From among the opinions acquired; *being able to integrate digital technologies with content knowledge within the framework of pedagogical knowledge over time, considering oneself to be different from the classical teacher model, thinking that the process of integration into social studies increases creativity as well, the opinion that digital applications make social studies a more fun course, the opinion that students in social studies course become more active with digital applications, the benefits of the opportunity to interact with students in virtual classes at any time, the opinion that courses designed in this model support collaborative learning studies as well, the idea of wanting to use the applications more effectively and productively while teaching* were the most striking ones.

When all these findings are taken into consideration, it can be said that they coincide with the opinion that technological infrastructure of the universities should be developed and improved in terms of qualified and competent academic staff and that the training of pre-service teachers to be organized accordingly (Kurt, 2013). Considering the triad of technological pedagogical and content knowledge usage achieved in this study, it is also concluded that the advice of Koehler and Mishra (2005) regarding those responsible for training teachers to train them to be able to use technological tools correctly and properly, is also followed. Therefore, the study's finding that technology integration can be compensated by pre-service training, strengthens Hur et al. (2010)'s views.

Recommendations

Based on the literature and the finding of this study, it is recommended that pre-service training activities should be focused on deep-rooted solutions in the use of technology in integration with courses. In this regard, projects involving face to face training for all academics could be implemented and vocational courses in the Department of Education can be taught more practically. This study was conducted only with social studies teachers. However, similar course designs can be carried out in different branches. In order to observe the effects of the education given to pre-service teachers in real classroom environments, longitudinal researches including the process of teaching practice can be conducted.

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