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An Investigation into Digital Literacy Views of Social Studies Preservice Teachers in the Context of Authentic Learning

Seda ÖNGER[1]
University of Gazi, Ankara, TURKEY

Turhan ÇETİN[2]
University of Gazi, Ankara, TURKEY

Abstract

The learning characteristics of the individuals have been rapidly changing, and the current 21st century learners are now expected to have innovation, digital literacy, life and career skills. The educational systems must be outfitted with a prerequisite of digital resources, and curricula for digital literacy should be designed to promote authentic learning environment to which students will relate and respond.This study aims to determine how social studies teacher candidates perceive the concept of "digital literacy." Accordingly, social studies teacher candidates' metaphors about digital literacy in the context of authentic learning were examined through semi-structured interviews implementing the survey model as a qualitative research technique. The study was carried out in a university in the Central Anatolia Region of Turkey in the fall term of the academic year of 2017-2018, with teacher candidates in the programs of social studies teaching. A semi-structured interview form and a metaphor completion task developed by the researchers were used as the data collection tools. Based on expert opinions, the drafts of the semi-structured interview form and the metaphor completion task were revised and finalized. The data were analyzed and interpreted through content analysis. Based on the findings, some suggestions are made.

Keywords

Digital Literacy; Social Studies; Qualitative Research; Preservice Teachers.

[1]Corresponding author: PhD Student, University of Gazi , Institute of Educational Sciences, Ankara,Turkey, E-mail: sedaonger [at] gmail.com
[2]Prof., University of Gazi, Faculty of Education, Ankara, Turkey, E-mail: cetin.turhan [at] gmail.com
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"21st-century skills" has been the most frequently discussed term related to pedagogical issues currently (Silva, 2009, p. 630). The 21st century learning framework consists of a series of skills that learners need to equip themselves with in order to meet the requirements of the professional sphere in the near future (Miller, 2009). In the modern digital environment, media literacy is a key tool to have. In their quest for creative methods of instruction, faculty members need to know how to go about developing this type of literacy. Understanding the jargon of students who are called the "digital natives" may help the faculty in their efforts at fostering such media literacy (Brown, 2006, p. 20). The amount of research and theoretical literature about digital literacies, digital communication, and the instructional use of digital technology have been steadily rising (Milton & Vozzo, 2013, p. 74).

Pre-service teachers need to learn the 21st century teaching and learning skills in connection to smart social networking (Boholano, 2017, p. 22). By using technology, a wide range of authentic contexts can be brought into the classroom (Herrington and Kervin, 2007, p. 4). With the help of the newly-available instructional technologies, our students can have more authentic learning experiences driven by experimentation and action. Authentic classroom contexts are not just simple examples based on real-life practices exemplifying the focal concept in a specific lesson. Providing a genuine purpose for learning, the context must be comprehensive, sustainable, and sophisticated enough to offer learners opportunities for further explorations. To demonstrate how the knowledge learned in the classroom will be eventually applied in real life, it must first show the whole environment, rather than presenting the elements individually and discretely. Utilizing the Internet and diverse communication, visualization, and simulation technologies, university students can rebuild the past, observe phenomena by using remote tools, and create some crucial associations with their advisors from all corners of the world (Lombardi, 2007). Borthwick, Bennett, Lefoe, & Huber (2007) state that authentic learning occurs through three models called "apprenticeship, simulated reality, and thought", and parallelisms to the real world are drawn by using virtual technologies. As part of pedagogical practice in teacher education, it serves as an opportunity to integrate authentic learning opportunities as a specialty in acquiring digital literacy.

Learning is ensured by considering the authentic learning and natural learning processes which keep in step with the constantly evolving technologies. Obviously, authentic learning further requires a certain delivery of education that considers the potential technological developments in the future (Bektaş & Horzum, 2014). For this purpose, authentic learning can be easily designed for the classroom settings at the tertiary level, and is ideal for web-based environments. Even though, the modern higher education context does not seem to support the imaginative thinking necessary to further such authentic learning, higher education institutions welcome and adopt web-supported learning. Thus, authentic learning can be extensively used to enhance student learning (Herrington, Reeves & Oliver, 2010, p. 2).

According to Hobbs and Morre (2013, p. 18), the evolution of literacies can be mainly outlined as follows: (a) *Rhetoric:* Speaking and listening; (b) *Print Literacy*:

Reading and writing; (c) *Visual Literacy*: Image design, interpretation, and creative composition; (d) *Information Literacy*: Information access, retrieval, evaluation, and usage; (e) *Media Literacy*: Analyzing messages from media and popular culture and composing with technology tools; (f) *Critical Literacy*: Recognizing and resisting power relationships in messages and information; (g) *Computer Literacy*: Understanding and using computer technologies effectively; (h) *News Literacy*: Understanding and evaluating news and current events; and finally (i) *Digital Literacy*: Being a socially responsible user of the Internet and social media.

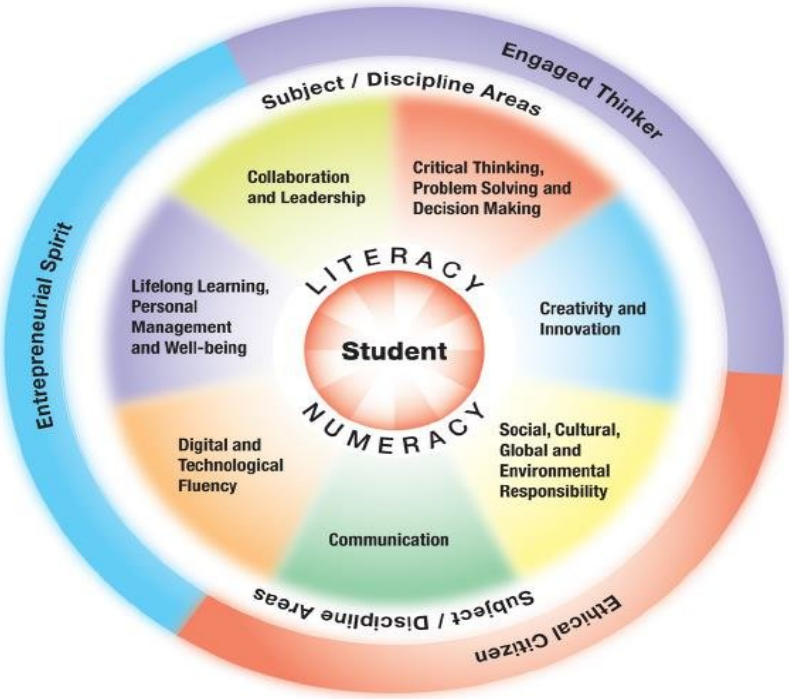

Figure 1. Twenty-first century skills framework (Source: *Framework for student learning: Competencies for engaged thinkers and ethical citizens with an entrepreneurial spirit* (Alberta Education, 2011).

"Digital Literacy" (DL) is a buzzword that higher education adopts and uses in multiple ways, just like the buzzwords of "reflective practice," "student-centred learning," "blended learning", "flipped learning," "student engagement," "experiential learning," and "disruptive innovation." (Walton, 2016, p. 1). It refers to the ability to apply digital technologies to carry out tasks like reading and interpreting texts, sounds, and images, replicating data through digital manipulation, interacting with others by using media-appropriate language, and analysing and using new knowledge obtained from digital sources (Jones-Kavalier and Flannigan, 2006, p. 9).

Digital literacy covers many subskills, such as presentation of information (without creative writing and visualization), the evaluation of information (without systematic reviewing and meta-analysis), and organization of information (without the construction and use of terminologies, taxonomies and thesauri) (Bawden, 2008, p. 26).

Digital literacy tools include a great number of sorts and they function in a variety of ways. To illuminate, the use of computers and personal electronic devices, and digital software for a wide range of life assisting functions are some of the examples of given tools. Besides; navigating toolbars, shortcuts and menus, communication on mobile phone devices, social media applications, blogging are also be classified within the digital literacy tools. The tools may further provide the users with manipulation of images or videos to create a digital storyboard (Tierney, et al., 2006). Digital Literacy is the skill to properly apply these tools to find out, access, manage, integrate, assess, analyse and synthesize digital resources, build new knowledge, create media, and communicate with other individuals in specific life contexts, to facilitate constructive social action, and to reflect upon this process (Martin & Grudziecki, 2006, p. 255). Digital Literacy also has many interlinked components that can be integrated into academic curricula, as shown in Figure 2 below.

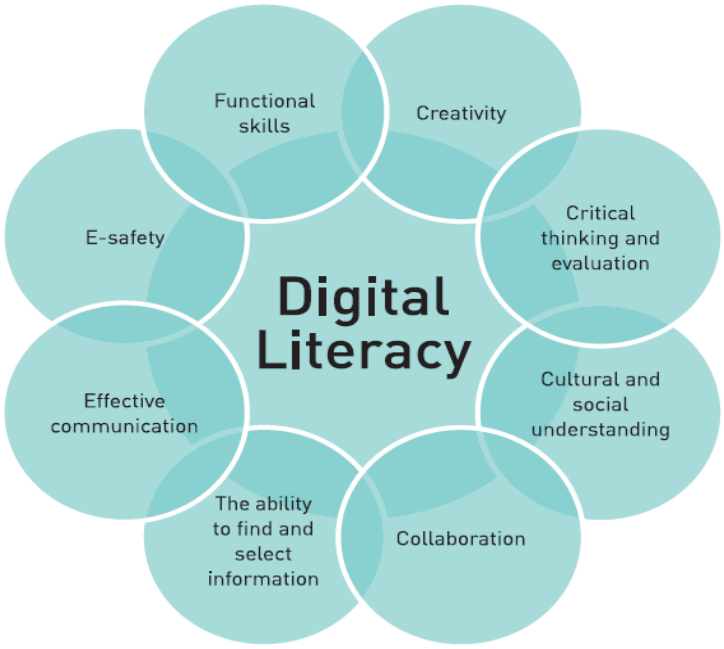

Figure 2. The components of digital literacy (Source: *The Futurelab Handbook: Digital literacy across the curriculum* (Lingard, 2010).

Digital literacy has a positive impact on learner skills that are crucial for their learning success. Digital resources are much easier to access than the traditional ones, and modern organizations prefer to use computers to perform routine tasks rather than employees (Techataweewan & Prasertsin, 2017, p. 216). Improving students' ICT skills calls for teachers to be trained in terms of skills and teaching methodology. Therefore, teachers need to develop their pedagogical content knowledge besides adequate digital competence. Teaching digital competence can be obtained by synthesizing the technological skills, knowledge of the methodological affordances of technology, and the attitude towards ICT in improving and transforming the pedagogical

processes (Baelo & Svenssona, 2015, p. 1529). It must be kept in mind that application of technology can greatly enhance classroom instruction, but this by itself will not help learners to gain digital literacy skills. Furthermore, digital literacy does not simply mean having basic computer skills, but rather refers to real-time technology application, problem solution, and effective communication. Learners need to experience, practice, and apply classroom tasks to achieve the ability to perform well in a digital world (Jenkins, 2015, p. 3). This study aims to contribute to the development of conceptual framework for digital literacy, which is lacking in the literature by determining the meanings of the teacher candidates' in digital literacy within the domain of authentic learning.

The review of the research literature in Turkey reveals that, in their study on teacher digital literacy, Öksüz et al (2016) found out that teachers' metaphors can be categorized as Information Literacy, Technical Literacy, and Socio-Emotional Literacy. Further, Üstündağ et al (2011) developed a scale by examining the digital literacy perceptions of science teacher candidates, and determined that their digital literacy scale was valid and reliable. Their findings indicate that science education teacher candidates overall have a good level of digital literacy skills. Regarding the 21st century skills, there are many studies that focus on the attitudes, opinions, competencies, and metaphors of the prospective teachers (Yalçın, 2018; Hamutoğlu et al, 2017; Uslu et al, 2016; Aygün et al, 2016; Odabaşı et al, 2013; Bacanak, 2013). There is a great need for teacher metaphors and opinions to fully explain how digital literacy is conceptualized and handled in social studies. But the research focusing on the digital literacy of social science teacher candidates is almost nonexistent. Hence, this study is expected to fill a significant gap in the literature as well as contributing to the improvement of 21st century teacher education.

Research Model

This study adopts the qualitative research method, which involves the use of methods such as observation, interview, and document analysis to find out perceptions and events in a natural setting (Yıldırım & Şimşek, 2013). In this research, in order to determine how the social studies teacher candidates perceive the concept of digital literacy in the context authentic learning, semi-structured interviews and surveys of preservice teacher metaphors were conducted, establishing data triangulation.

Triangulation is performed by combining both interview and observation, mixing various purposeful samples, or analyzing the way differing theoretical perspectives illuminate a certain type of analysis (Patton, 2002, p. 248). Triangulation usually requires comparing and synthesizing qualitatively obtained data with quantitatively collected data (Patton, 2002, p. 556). Therefore, methodological triangulation was employed in this study to obtain a more in-depth and better-balanced snapshot of the participant perceptions.

Metaphors allow comparisons between two things to draw our attention to similarities between these things and to come up with explanations by replacing one thing with another (Şengül, Katrancı & Cantimer, 2014, p. 91). Yob (2003), however, views metaphor as a mental image used by an individual to describe an abstract and

complex concept at a high level (as cited in Saban, 2004, p. 2). Metaphors have also been used to analyze and improve many specific educational fields (McCandless, 2012, p. 539). Metaphors can be used as a tool to structure research data, to shed light on a familiar process in a novel way or as a tool to trigger emotions. Metaphors may also guide the researcher towards appropriate interventions (Carpenter, 2008, p. 275). The present study further inquired into the metaphorical conceptualizations to reveal the cognitive bases of the perceptions and views reported by the participants, aiming a deeper analysis.

Semi-structured interviews are very popular with researchers because they are uniform and flexible, not limited by the constraints of the multiple-choice tests and surveys, and help to obtain in-depth knowledge on specific subjects (Yıldırım and Şimşek, 2013). The content analysis method, which involves the identification, coding, and categorization of data (Patton, 2014), was used in the analysis of the data collected in the current study.

The study focuses on digital literacies in the context of the authentic pedagogy. This study was carried out with 32 teacher candidates in a Social Studies Teaching program in a university in the Central Anatolia Region in Turkey in the fall term of the 2017-2018 academic year. A semi-structured interview form and a metaphor completion task were developed and carried out by the researcher. In order to determine teacher candidates' views on digital literacy, a semi-structured interview form consisting of a total of 7 questions, including 4 basic questions and their sub-questions was used. Based on expert opinions, the drafts of the semi-structured interview form and the metaphor completion task were revised and finalized. The semi-structured interview form was intended to give the teacher candidates the opportunity to freely express their thoughts on digital literacy and authenticity. Also, in order to determine the participants' mental imagery of the digital literacy concept, each participant was asked to complete the following sentence: "Digital literacy is like…., because…" In the study, teacher candidates were coded with numbers, and these numbers were used in the citations. In addition, all participants in the data collection tools of the teachers were given the same numbers.

Research Group

The study group consists of fourth-year students attending the Social Studies Program of a faculty of education in a Turkish university during the 2017-2018 academic year. The research group was selected according to the purposeful sampling method. A total of 32 (19 female and 13 male) students participated in the study.

Findings

In this part of the study, findings obtained by analyzing the data gathered from the metaphors and interviews with the teacher candidates are presented.

The findings, categorized as usefulness, virtuality, universality, benefits, use, limitations, and the difference between digital media and real media are presented in the Tables below. The metaphors produced by the teacher candidates in the "usefulness" category are shown in Table 1.

Table 1.

The Distribution of Metaphors Produced on "Usefulness" of the Digital Literacy

Category	Metaphors	*n*
Usefulness	Human	2
	Phone	2
	Information	1
	Television	1
	Detective	1
	Cartoon	1
	Active Citizen	1
	Film	1
	Magic	1
	Professor	1
	Pencil	1
Total		13

When Table 1 is analyzed, the metaphors developed by social studies teacher candidates for the digital literacy are grouped into 11 themes. The following quotes expressed by the participants may help shed further light on these themes:

S8: "*Digital literacy is like a professor, because the professor does not believe every knowledge, he finds useful information"*

S14: "*Digital literacy is like magic, because we can easily access useful information with a single key."*

Metaphors falling into the "virtuality" category are shown in Table 2.

Table 2.

The Distribution of Metaphors Produced on "Virtuality" of the Digital Literacy

Category	Metaphors	*n*
Virtuality	Addiction	4
	Landscape	1
	Website	1
	Game	1
	World	1
	Digital Tools	1
	Sea	1
Total		10

When Table 2 is analyzed, it can be seen that the metaphors developed by social studies teacher candidates for the digital literacy are grouped into 6 categories. Some quotes from the written views are as follows:

S10: "*Digital literacy is like an addiction, because we use it constantly and we cannot break it and this virtuality damages us very much"*

S2: "*Digital literacy is like a landscape, we see it, we know it but we cannot touch it."*

S1: "Digital Literacy is like the sea. Because you are faced with all kinds of living and vital activities. But if you go too far, you can die without oxygen, so it is useful to use it at a certain level."

Metaphors produced by the teacher candidates in the "universality" category are presented in Table 3.

Table 3.

The Distribution of Metaphors Produced on "Universality" of the Digital Literacy

Category	**Metaphors**	***n***
Universality	Timelessness	1
	Puzzle	1
	Age	1
	Dimension	1
Total		4

Table 3 reveals four themes for digital literacy as regards the metaphors developed by social studies teacher candidates. The following quotes are illustrative of these themes:

S25: "*Digital literacy is like a puzzle, because the puzzle consists of many parts and you look at all to find one of many pieces."*

S28: "*Digital literacy is like a timelessness, because timelessness allows everything to happen in all circumstances."*

Based on the participants' responses to the question "What is digital literacy?" the frequencies for the codes created under the category of "Digital Literacy" are given in Table 4 below.

Table 4.

The Codes and Frequencies in the "Different Forms of Digital Literacy" Category

Category	**Code**	***n***

Category	Code	*n*
	Supporting with Technological Tools	11
	Information in Virtual Environment	8
	Becoming Conscious-Conscious Use	5
Different Forms of Digital Literacy	Social Media	2
	Technological developments	2
	Non-Real Information Process	1
Total		31

Table 4 above clearly shows that the participants mostly emphasize that the digital literacy is technological tools (8); information in virtual environment (5); and becoming conscious/conscious use (2). Two direct quotes from the written views are given below.

S2: "*Digital literacy is the right solution for the media elements of people such as social media, telephone, television and internet"*

S12: "*The technology has brought the era of using the internet to read, research is not only done with magazines and books, technological tools are made."*

S5: *"Digital literacy is the conscious use of media tools."*

In Table 5 below, the frequencies of responses of the participants to the question "What are the benefits of digital literacy?" are displayed.

Table 5.

Benefits of Digital Literacy

Category	Code	*n*
	Reaching All Information	9
	Self study	5
Benefits of Digital Literacy	Course-Homework	5
	Research	4
	Personal Development	4
	Distance Education	
Total		27

When Table 5 is examined, it can be seen that the participants mostly report that the benefits of digital literacy is reaching all information (9), self-study (5), and course homework research (5). Some direct quotes from the written views are as follows:

S12: "*We will learn faster with less effort."*

S13: "*I use a lot of digital tools in my studies and homework.*"

S24: "*It becomes better learning through digital literacy, it benefits both visually and audibly.*"

In the Table below, the findings regarding the question "What are limitations of digital literacy?" are shown by their rank of frequency.

Table 6.

Limitations of Digital Literacy

Category	Code	*n*
Limitations of Digital Literacy	Time consuming	5
	Harmful Sites	4
	Digital Bullying	3
	Games	3
	Access to Information	3
	Laziness	2
	Radiation	2
	Unconsciousness	2
	Distractor	2
Total		26

In Table 6 above, it can be seen that the participants mostly emphasize the limitations of digital literacy as time consuming (5), harmful sites (4), and Digital Bullying (3). The following quotes succinctly represent these limitations:

S9: "*All kinds of harmful information is open.*"

S13: "*Digital tools are being used to play the game.*"

S30: *"Digital violence is being applied, and this is not checked."*

In Table 7 below, the responses of the participants to the question "What digital technologies do you use?" are presented based on the frequencies for the codes created under the category of "Use of Digital Technology."

Table 7.

Use of Digital Technology

Category	Code	*n*
Use of Digital Technology	Mobile	16
	Computer	10
	Television	2
	Smart Board	2
Total		30

Table 7 indicates that the participants mostly use mobile digital technologies (16), followed by computer (4) and television (2). The quotes below represent their most typical choice of technological device for daily use.

S32: "*I use the most phones, sometimes it can be very time consuming."*

S13: "*I use the phone for research, banking, homework; sometimes I use a computer."*

In Table 8 below, the views of the participants regarding the question "What is the difference between digital media and real media?" are given by their order of frequency.

Table 8.

Difference between Digital Media and Analogue Media

Category	Code	*n*
Digital Media vs Analogue Media	Save Time	4
	Source of information	4
	21st century	2
	Interaction	2
	Convenience	2
	Permanence	2
	Access	2
	Inquiry Information	2
Total		20

Table 8 is above clearly shows that the participants mostly think that the use of digital technology saves time (4), is a source of information (4), and it is essential for the 21st century (2). The quotes below exemplify these views:

S3: "*I usually prefer digital media, it's easy and cheap, and it saves time."*

S8: "Most of the 21st century technology is that it is much more popular than digital media, access very easy, even trainings can be remote."

S22: "Digital media and tools has everything that real media has to offer."

Conclusion

The use of technology in education is important in this era of global, authentic learning of the twenty-first century.

Accessing authentic contexts via technological tools means that by using images, animations and sound, learning scenarios can be fully presented in a realistic and motivating way. However, lacking such technological tools, students may fail to engage with the material conceptually (Herrington and Kervin, 2007, p. 5). Coined only 15 years ago, the term Digital Literacy is yet to be clearly defined, in part because of the dizzying speed of social and technical development that lead today's popular products and services to vanish in a decade or sooner. Web-based tools such as Google, Facebook, and YouTube, and the practices based on them, such as online inquiry,

networking, and e-learning, are part and parcel of how we approach living, learning, and working in our modern digital society (Meyers, et al., 2013, p. 366).

This study aimed to determine the views and metaphors of the preservice teachers studying in the social studies teaching program of a Turkish faculty of education. Social studies students produced 27 metaphors related to the digital literacy. These metaphors were grouped into 3 different categories. The semi-structured interviews yielded five digital literacy categories.

Survey findings show that the social studies teacher candidates' metaphors and opinions related to digital literacy concentrate in the categories of Usefulness, Virtuality, Universality, Different Forms of Digital Literacy, Benefits of Digital Literacy, Limitations of Digital Literacy, Use of Digital Technology, and Digital vs. Analogue Media. The highest number of digital literacy metaphors fall into the "usefulness" category.

In conclusion, based on the findings of this study, digital literacy can be improved in the context of authentic learning. Digitality is important for today's z-generation, which can only be achieved through authentic learning. Teacher candidates use digital tools, especially for education, which concerns the web-based learning dimension of authentic learning.

The review of the research literature in the world explains that, in their study on digital literacy, Maden et al (2018) evaluate the secondary school 5th grade Turkish course books (guide book, course book and workbook) in the context of digital literacy. Also, Schreuers et al (2017) proposed a model with the aim of understanding the needs of older adults in gaining greater digital literacy. Simpsona and Obdalova (2014) found out that Multiliteracies', 'Academic Literacies', and 'Digital Literacies' with particular reference to EAP and Academic Discourse are considered. Cordell (2013) states that digital literacy and information literacy concepts complement each other.

Due to the absence of digital literacy research in the context of authentic learning directly related to social studies, comparison of the findings of this study to those of other studies is not possible at this point. However, based on the findings, the following suggestions can be made: In the undergraduate social studies courses, especially those regarding the 21st century, the concept of digital literacy should be taught with an interdisciplinary approach. More in-depth studies of preservice or in-service teachers' digital literacy perceptions can be conducted to identify other relevant factors. Social studies teachers play a key role in teaching digital literacy. Although there are some learning outcomes stated regarding the knowledge, skills and values in the social studies teacher education programs, there is no course directly related to this subject. Incorporating a course on digital literacy into the social studies teacher education programs could have a positive impact on preservice teachers' forming positive attitudes towards digital literacy, and may help enhance their digital literacy competencies.

Despite the availability of authentic learning and technology studies, digital literacy has not been studied in the context of authentic learning.

Future studies on a larger scale and with a wider scope can be conducted by focusing on all departments of education so that similarities and contrasts to the social studies preservice teacher perceptions can be revealed. Further quantitative research could also focus on measuring the digital literacy skill in the context authentic learning competencies of social studies preservice teachers, pointing out the shortcomings and challenges to be addressed.

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Biographical Statements

Seda ÖNGER is Ph.D student at Social Study Education, Institute of Education Sciences at the University of Gazi. Her research is focused on, social studies education, global and civic education.

Turhan ÇETİN is a professor of social studies education at the University of Gazi. His research is focused on, social studies education and geography education