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The Effect of Web 2.0 Supported Social Studies on the Digital Literacy Skills of Secondary School Students

Web 2.0 Araçlarıyla İşlenen Sosyal Bilgiler Dersinin Ortaokul Öğrencilerinin Dijital Okuryazarlık Becerilerine Etkisi

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ABSTRACT: The focus of this study is to investigate the effects of using Web 2.0 tools in the social studies "Global Connections" learning area on students' digital literacy levels. A quasi-experimental model was used and 38, seventh graders participated the research. The digital literacy scale, created by Ng (2012) and translated into Turkish by Hamutoğlu, Güngören, Kaya-Uyanık, and Gür-Erdoğan (2017) was employed for data collection. Pre-testing was carried out using the digital literacy test. Courses were imparted according to the current curriculum in the control group and through Web 2.0 tools to the experimental throughout the application. For the experimental group, WordArt, StoryJumper, Canva, YouTube and Renderforest were used in the teaching of learning outcomes, along with Edmodo, which also allowed students interacting with teacher and among themselves outside the classroom. Then a digital literacy test was administered as a post-test. Ultimately, it was determined that the experimental group's digital literacy skills differed statistically significantly from the control group. It is thought that this research, which is limited to the seventh grade "Global Connections" learning area, should be conducted at different learning areas, levels and results should be evaluated.

Keywords: Digital literacy, web 2.0 tools, social studies, global connections, global issues.

ÖZ: Bu araştırmanın amacı, 7. sınıf sosyal bilgiler "Küresel Bağlantılar" öğrenme alanında yer alan dört kazanımın öğretiminde kullanılan Web 2.0 araçlarının, ortaokul öğrencilerinin dijital okuryazarlık becerilerine etkisini belirlemektir. Araştırmada, nicel araştırma yöntemi, yarı deneysel model kullanılmıştır. Araştırmanın çalışma grubu, 2021-2022 Eğitim Öğretim döneminde, Aydın ili Köşk ilçesinde, bir devlet ortaokulundaki 38, 7. sınıf öğrencisinden oluşmaktadır. Araştırma verilerinin toplanmasında, Ng (2012)'nin geliştirdiği, Hamutoğlu, Güngören, Kaya-Uyanık ve Gür-Erdoğan (2017)'ın Türkçe' ye uyarladığı, dijital okuryazarlık ölçeği kullanılmıştır. Dört haftalık uygulama öncesinde öğrencilere, dijital okuryazarlık testi ön-test olarak uygulanmıştır. Uygulama sürecinde dersler, deney grubu öğrencileri ile Web 2.0 araçları kullanılarak, kontrol grubunda ise mevcut öğretim programına uygun şekilde işlenmiştir. Deney grubu için ders dışında öğrencilerin kendi arasında ve öğretmenle etkileşimine de olanak sağlayan Edmodo ile birlikte, WordArt, StoryJumper, Canva, Renderforest, YouTube, kazanımların öğretiminde kullanılmıştır. Uygulama sonunda, öğrencilere dijital okuryazarlık testi son-test olarak uygulanmıştır. Analizlerin sonucunda, Web 2.0 araçları destekli Sosyal Bilgiler öğretiminin uygulandığı deney grubuyla, kontrol grubu öğrencilerinin dijital okuryazarlık becerilerinde, deney grubunun lehine istatistiksel olarak anlamlı bir fark oluştuğu görülmüştür. 7. sınıf "Küresel Bağlantılar" öğrenme alanı ile sınırlı bu araştırmanın, farklı öğrenme alanları ve sınıf düzeyinde de yapılıp sonuçlarının değerlendirilmesinin faydalı olacağı düşünülmektedir.

Anahtar kelimeler: Dijital okuryazarlık, web 2.0 araçları, sosyal bilgiler, küresel bağlantılar, küresel sorunlar.

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The search for knowledge by humans has undergone major changes over time. In the future, it will gain a different dimension than today. The influences of technology, which are felt in practically every stage of life in the 21st century, are growing every day (Acikgoz, & Akman, 2023; Akman, & Guven, 2015; Aküzüm, 2013). In the 21st century, literacy assumes a new dimension and adopts a complicated structure that incorporates a variety of abilities. Therefore, a teaching environment that allows both teachers and students to adapt to the digital world is necessary for the 21st century (Richardson, 2010). The traditional teacher paradigm and the traditional methods used in the classroom discourage involvement and learning among today's digital natives (Prensky, 2001).

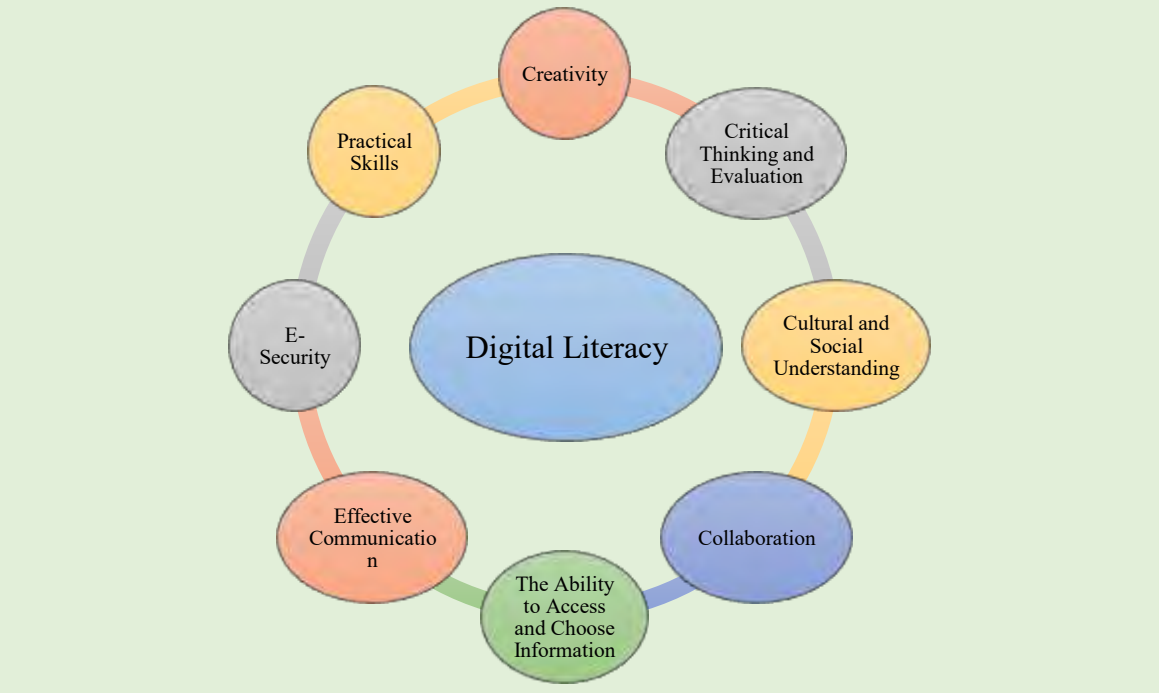
Students nowadays view classrooms, tables, and courses without technology as noncompliant with their conception of learning. Teachers should employ the technology in which today's students were born and grew up in addition to providing them with relevant and trustworthy experiences, and they should consider teaching methods for this (Başaran, 1972, p. 256). Teachers in Türkiye now have the chance to use digital technologies because interactive whiteboards have mainly taken the place of traditional classrooms. According to scholarly studies (Baki, 2022; Çenesiz, 2020; Çocuk, 2020; Ekemen, 2022; Merç, 2017; Nerse, 2021), using technology in the classroom helps pupils succeed academically and develop positive attitudes. By 2020, it will be impossible to dispute the role that digital technologies play in education whose significance has grown along with the epidemic process. In addition, it is necessary to use digital technologies safely. It is thought that it is necessary to be aware of its rights and responsibilities while using it, to know the right information channels in addition to effective communication skills, to have a social understanding both in their own society and in communication with individuals from different cultures, in short, to be digitally literate individuals. The significance of digital literacy has been made clear by this circumstance.

Information and communication technology use that goes beyond traditional literacy promotion is referred to as "digital literacy" (Erstad, 2008, p.188). The term "digital literacy" describes the combination of cognitive, emotional, psychomotor, and social abilities people need in order to use digital tools and function efficiently with digital devices (Blummer, 2008; Eshet- Alkali, 2004; Eshet- Alkali & Chajut, 2009). Digital literacy also requires adapting to new technologies, evaluating with a critical perspective, creating collaborative knowledge, confronting the situations that may arise, observing the rights of individuals and taking responsibility (Calvani, Cartelli, Fini, & Ranieri, 2008, p.186). In a study conducted in Türkiye (Akdoğan- Mindivanli, & Öner, 2023), secondary school seventh grade teachers and students defined digital literacy as accessing, sharing and producing information using digital tools.

The ability to adapt digital technology, which is now essential in our daily lives, is known as digital literacy. To guarantee the sustainability of many businesses and transactions in social life, it requires revealing and understanding the capacity to use digital technologies that we now have to use, knowing that we also have legal responsibilities (Rodriguez- de-Dios, Igartua, Gonzales, & Vaquez, 2016). Digital literacy consists of eight main components. These are shown in Figure 1:

Figure 1

Components of Digital Literacy



Note. (Payton, & Hague, 2010).

As seen in Figure 1, digital literacy consists of a combination of different interrelated components and imposes responsibilities on individuals. Testing the accuracy of the information is necessary to obtain reliable and precise data. The digital content created is affected by the society in which individuals live. In the understanding of critical thinking, being aware of the values of the society in which they live, in the understanding of critical thinking, individuals have to look at their worldview both from their own perspective and when cooperating with people from different cultures. They ought to be informed of their legal obligations and rights in relation to the security of private data in digital settings. This situation imposes important duties on social studies teaching.

Social studies, which by its nature is everything for the past, present and future of human beings (Barr, Barth, & Shermis, 2013) includes different disciplines. In this diversity, the nature of social studies is based on understanding the situation and conditions in the socio-cultural context in which people live (Akdağ, 2014; Kottler, & Gallavan, 2013; Öztürk, & Dilek, 2004). It has a rich content in teaching many acquisitions and concepts belonging to different disciplines in social studies, such as environment, international relations, democracy, history, society, law, economy, technology and society (Ministry of National Education (MoNE), 2004). The inclusion of digital literacy skills in the social studies curriculum shows that this course is crucial in helping students adjust to the digital information society of the 21st century. Developing digital literacy skills is closely related to students' use of digital tools in courses.

The method, technique, and tools utilized in teaching have a direct impact on its success. Web 2.0 tools, the number of which is increasing day by day take learning environments out of traditional understanding and provide students with the opportunity

to discover, design and disseminate information; makes classroom environments attractive to digital natives (Davidson- Shivers, Rasmussen, & Lowenthal, 2018). O'Reilly, who introduced the concept of Web 2.0 for the first time in 2004, characterizes Web 2.0 tools as those that provide a more mature, varied learning environment marked by network effects, user interaction, and openness (Musser, O'Relly, & The O'Relly Radar Team, 2007, p.5). With the possibilities that Web 2.0 tools provide both inside and outside of the classroom, students have the opportunity to make connections between information, to think critically and analytically and to develop cooperation (Huang, Hood, & Yoo, 2013, p. 633; Olaniran, 2009, p. 261). Byrne (2009) claims that using Web 2.0 tools gives teachers a variety of opportunities. In the classroom, utilizing Web 2.0 tools offers four advantages: efficiency, learning, learning to learn, and desire. Additionally, it supports the learning process by helping students gain 21st century skills. With its ability to host several disciplines, social studies is said to be one of the subjects whereby Web 2.0 techniques are applicable. By acquiring the knowledge, abilities, and Web 2.0 tools geared for social studies, students will be able to learn more successfully and will also advance their digital literacy. Digital literacy is essential in today's informal learning environments, and as was already said, it is one of the fundamental social studies abilities.

The World Economic Forum (WEF) (2020) listed the following 10 most crucial skills for 2025 in its Future of Professions Report:

- Active learning and learning strategies
- Analytical thinking and innovation
- Complex problem solving
- Critical thinking and analysis
- Creativity, originality and initiative
- Leadership and social influence
- Technology use, monitoring and control
- Technology design and programming
- Resilience, stress tolerance and flexibility
- Reasoning, problem-solving, and ideation (WEF, 2020) sorted like this.

These abilities make it clear that students in the twenty-first century are expected to be original, innovative, creative, and proficient users of technology. This generation wants schools to raise students with speed and practicality in mind. It is evident that many of the abilities covered in the 2018 social studies curriculum are comparable to those in the 2025 vision and coincide with the WEF's 2020 Report. The fundamental competencies covered in the social studies curriculum, such as media literacy, digital literacy, problem- solving, critical thinking, decision-making, self-control, entrepreneurship, social engagement, and innovative thinking, are aligned with the competencies of WEF.

Raising digitally literate children from an early age is essential in the 21st century, since digital technologies increasingly impact human existence. As a result of the growing popularity of wikis, blogs, instant messaging, and digital technologies, two million American youngsters between the ages of six and fourteen have their own websites (Pedro, 2007). It is possible to say that this number has increased even more in the last 17 years. In this context, it has an important place in raising 21st century people.

Social studies, which is based on human relations and society plays an important role in helping children, who are introduced to digital tools at an early age, acquire their rights and responsibilities in the use of these tools. It is believed that integrating Web 2.0 tools into social studies classroom settings will help students develop these abilities.

When the literature is examined, it can be seen that Web 2.0 tools are used in areas such as science (Açıkgül- Fırat, 2015; Akbaba, 2019; Gürleroğlu, 2019; Wright, 2017), foreign language teaching (Bozna, 2017; Daşkın, 2017; Gençtürk, 2017; Guksu, 2020; Kaynar, 2019; Kutlu- Demir, 2018). Social studies teaching (Balçın & Çalışkan, 2021; Keleş, 2019; Kantekin, 2023; Merç, 2017; Tünkler, 2021a, Tünkler, 2021b, Tünkler, 2022). When the literature is examined, it is seen that there are studies such as the following to determine the effect of the use of Web 2.0 tools in the social studies course on different skills and values. Historical inquiry skills (Bull, Hammond & Ferster, 2008), environmental sensitivity (Balçın & Çalışkan, 2021), social science research tool (Snee, 2008), critical thinking (Frisch, Jackson & Murray, 2013), digital citizenship (Richards, 2010). However, there appears to be a limited number of studies (Tepe & Çelik, 2021) to determine the effect of using web 2.0 tools on social studies for gaining digital literacy skills.

However, this research was also conducted on teacher candidates. On the other hand, no studies have been conducted regarding how employing Web 2.0 resources in social studies classes affects secondary school students' digital literacy. In this case, the research's aim is to include digital resources into the social studies curriculum and use Web 2.0 tools to educate students on pertinent course accomplishments. In conclusion, the goal of this study was to determine whether using Web 2.0 technologies in the classroom has an impact on students' digital literacy. The research's problem statement conducted for this purpose was presented as follows: “Does the seventh grade social studies course taught using Web 2.0 tools have an effect on students' digital literacy skills?” The following are the research's subproblems:

1. Is there a difference of statistical significance between the students in the experimental group and the students in the control group regarding their levels of digital literacy?

1.1. Is the difference between the students' digital literacy abilities and attitude sub-dimension in the experimental group and the students' sub-dimension in the control group statistically significant?

1.2. Does the technical sub-dimension of the learners' digital literacy abilities in the experimental group differ statistically significantly from the technical sub-dimension of the students' digital literacy skills in the control group in favour of the experimental group?

1.3. Do the students in the experimental group's cognitive sub-dimension of digital literacy skills differ from those in the control group's in a statistically significant way?

1.4. Is the social sub-dimension of students' digital literacy skills in the experimental group different from students' social sub-dimension in the control group in a statistically significant way?

2. Does the experimental group of students in the seventh grade social studies class show a statistically significant difference between the pre-test and post-test results on the digital literacy abilities scale?

2.1. Does the attitude sub-dimension of the digital literacy skills scale show a statistically significant difference between the pretest and posttest results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course?

2.2. Does the technical sub-dimension of the digital literacy skills scale show a statistically significant difference between the pretest and posttest results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course?

2.3. Does the cognitive sub-dimension of the digital literacy skills scale show a statistically significant difference between the pretest and posttest results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course?

2.4. Does the social sub-dimension of the digital literacy skills scale show a statistically significant difference between the pretest and posttest results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course?

Method

Research Model

The study employed the quantitative research approach with the purpose of determining the impact of the use of Web 2.0 technologies, which is the independent variable on digital literacy skill which is the dependent variable. A quasi-experimental design comprising experimental and control, groups were used to carry out this methodology. The application of the quasi-experimental design is carried out by making measurements depending on the dependent variable both prior to and following the experimental research (Karasar, 2014, p. 99). In quasi-experimental research, participants are divided into groups before starting the research and independent of the researcher's influence (Balcı, 2015; Gliner, Morgan & Leech, 2015; Karagöz, 2017).

Data Collection and Experimental Process

The "digital literacy scale" used in the research was developed by Ng (2012). It was adapted to Turkish by Hamutoğlu, Güngören, Kaya-Uyanık and Gür-Erdoğan (2017), and a measurement invariance study was conducted for secondary school students by Eroğlu, Güngören, Kaya-Uyanık and Gür-Erdoğan (2019). The scale is in a five-point likert format. This scale consists of attitude, technical, cognitive and social factors and 17 items. The Cronbach alpha coefficient of the scale was calculated as .93. In this study, the Cronbach alpha coefficient of the scale was calculated as .86.

Before starting the implementation process of the research, the school principal, parents and students were informed about the research process. Edmodo 7/A class was created with the experimental group students. Students were also shown how to use additional Web 2.0 capabilities through demonstration applications. Facebook and Edmodo both operate on similar principles. Students who are familiar with Facebook

from their adult social circles have been shown to transition to Edmodo with ease. Students were introduced to more Web 2.0 tools like Renderforest, StoryJumper, WordArt, Canva, YouTube and prototype applications were created. Figure 2 displays the research's accomplishments as well as the Web 2.0 tools that were employed.

Figure 2

Outcomes and Web 2.0 Tools Used

The Web 2.0 tool Renderforest was used for the outcome of "S.S.7.7.1. S/he gives examples to the organizations of which Türkiye is a member" (MoNE, 2018). Renderforest, with the slogan "The only limit is your imagination", is a tool that helps students create video animations based on what they have learned. Students contributed to the creation of the animation by sharing their thoughts on Türkiye's geopolitical position and place in the world, its significance, its contribution to world peace with the international organizations it is a member of, its role in solving problems, and the organizations they are members of.

Web 2.0 tool StoryJumper was used for the outcome of "S.S.7.7.2. S/he recognizes the economic regions and institutions that Türkiye has relations with" (MoNE, 2018). Offering collaborative learning, StoryJumper is a tool that helps students create e-books. Students in the course talked about how the global economy, economic activity, and international economic institutions affect international relations. The organizations Türkiye belongs to and the roles Türkiye has played in the global economy are described. In light of the information that they obtained in the session, the students used the interactive whiteboard to write their electronic book.

It was discussed with the students that prejudices, stereotypes, and stereotypes are impressions developed against a community and nation for the acquisition of "S.S.7.7.3. Questioning stereotypes about various cultures"(MoNE, 2018). Videos on the topic were viewed on YouTube. A Web 2.0 tool called WordArt was employed in the application procedure. With the help of the application WordArt, students were able

to turn the keywords they had developed in their cognitive memories for the acquisition into a word cloud. On the word cloud, it was shown that the pupils articulated the pre-existing stereotypes about various countries and ethnicities. The children had the chance to compose their own statements and the stereotypes they proposed with their friends as part of the application procedure.

Web 2.0 tool Canva was used for the outcome of " S.S.7.7.4. Develops ideas and suggestions for the solution of global problems with his friends" (MoNE, 2018). Global problems such as terrorism, migration, hunger, climate change, wars, hunger were discussed with the students, and the subject was discussed with examples from Türkiye's close geography and the world. Videos on international issues were watched on YouTube. During the application process, posters from Canva were designed with students. With Canva, an infographic tool, students designed posters for learning outcomes about problems that threaten the world. Student products were shared on the Edmodo tool and it was aimed that students stay in touch with each other outside the classroom.

Data Analyses

Analyses were carried out using the data gathered from the digital literacy test used in the research. A normality test was applied to determine whether the data showed normal distribution. First, the results of the Shapiro-Wilk test were examined because the sample size for the normality tests was less than thirty. After examining the histogram graph, the distribution was determined to be normal based on the values of Skewness and Kurtosis. The normality test results of the test group and control group are given in Table 1 and Table 2 below.

Table 1

Experimental Group Normality Test Results

	Kolmogorov-Smirnov	Shapiro-Wilk	Skewness	Z Score	Kurtosis	Z Score
Digital Literacy Scale Pre-Test	.124	.366	.024	0.044	-1.012	-0.974
Digital Literacy Scale Post-Test	.088	.095	.334	0.623	-1.087	-1.047

Table 2

Control Group Normality Test Results

	Kolmogorov-Smirnov	Shapiro-Wilk	Skewness	Z Score	Kurtosis	Z Score
Digital Literacy Scale Pre-Test	.200	.500	.005	0.009	-.676	-.651
Digital Literacy Scale Post-Test	.200	.310	.161	0.300	-.981	-0.945

When the tables are evaluated, it means that the Shapiro-Wilk test results ($p>0.05$), which is one of the normality values of the test and control groups provide normality (Can, 2018, p. 89). When the skewness values are examined, the fact that the distribution's z score which is calculated by dividing its skewness coefficient by the standard deviation, ranges from +1.96 to -1.96, can be interpreted as not deviating too much from the normal (Büyüköztürk, 2017, p. 42). It can be accepted that the data are normally distributed in the tests performed within the context of these findings.

The test and control groups were compared using an independent samples t-test, and the test group's pre- and post-test results were analysed using a dependent samples t-test, once the normality tests had confirmed that the data had a normal distribution. The t-test for independent samples is utilized to determine whether a significant difference exists between the means of two independent samples (Büyüköztürk, 2017, p. 39). If more than two related measurement sets have mean scores that differ noticeably from one another, the related samples t-test is employed to find out. (Büyüköztürk, 2017, p. 40). In order to control the effect of the independent variable on the dependent variable d values, the standardized effect size index formulated by Cohen were calculated. Accordingly, d values of .2, .5 and .8 are interpreted as small, medium and large, respectively (Büyüköztürk, Çokluk, & Köklü, 2017).

Ethical Procedures

The researchers were contacted in order to get the appropriate rights for the using the digital literacy scale. Prior to initiating the implementation phase, Afyon Kocatepe University's ethics committee approved the research (date: May 13, 2022; number: 2022/173), and the Aydın Provincial Directorate of National Education granted research permission.

Results

Normality tests revealed that the data displayed a normal distribution. The results of the independent samples t-test and the data of the related samples t-test for the pre-test and post-test results of the experimental group are presented in tables in this context, in this section of the research, in the comparison of the data gathered from the control and experimental groups, and they are interpreted.

Digital Literacy Levels of Students

Is there a difference of statistical significance between the students in the experimental group and the students in the control group regarding their levels of digital literacy that works in favor of the experimental group? Results relevant to this sub-problem are displayed in Table 3.

Table 3

Digital Literacy Scale Post-Test Results

Groups	n	$\bar{x}$	s	t	sd	p	cohen d
Experimental	20	4.02	0.52	3.960	25.96	0.001	1.29
Control	18	3.02	0.95				

*p< .05

An independent sample t-test was performed, as indicated in Table 3, to see whether using Web 2.0 technologies in the social studies course significantly differed in terms of digital literacy skills. There was a significant difference between the post-test mean score of the students in the experimental group, where the courses were conducted with Web 2.0 tools ($\bar{x}$= 4.02), and the test score average of the students in the control group, which was conducted with the course books and activities $\bar{x}$= 3.02; t= 3.960, p<0.05. Accordingly, it is seen that the calculated effect size is at a high level (d = 1.29). Therefore, it can be said that using Web 2.0 tools in social studies course has a significant effect on digital literacy skills.

Is the difference between the students' digital literacy abilities and attitude sub-dimension in the experimental group and the students' sub-dimension in the control group statistically significant? Findings related to this sub-problem are shown in Table 4.

Table 4

Results of the Digital Literacy Scale Attitude Sub-dimension

Groups	n	$\bar{x}$	s	t	sd	p	cohen d
Experimental	20	3.88	0.71	3.346	36	0.002	1.07
Control	18	3.00	0.91				

*p< .05

As can be seen in Table 4, there was a significant difference between the test score average of the attitude sub-dimension of the students in the test group in which the

courses were conducted with Web 2.0 tools ($\bar{x}$= 3.88) and the test point average of the students in the control group where the course was taught in accordance with the current curriculum $\bar{x}$= 3.00; t= 3.346, p<0.05. Accordingly, it is seen that the calculated effect size is at a high level (d = 1.07). In this case, it is seen that using Web 2.0 tools in the social studies course contributed positively to the scores obtained from the attitude sub-dimension of the digital literacy scale.

Does the technical sub-dimension of the learners' digital literacy abilities in the experimental group differ statistically significantly from the technical sub-dimension of the students' digital literacy skills in the control group? Findings related to this sub-problem are shown in Table 5.

Table 5

Digital Literacy Scale Technical Sub-Dimension Results

Groups	n	$\bar{x}$	s	t	sd	p	cohen d
Experimental	20	4.20	0.50	3.988	23.81	0.001	1.31
Control	18	3.12	1.04				

*p< .05

As seen in Table 5, there was a significant difference between the technical sub-dimension test score average of the students in the test group in which the courses were conducted with Web 2.0 tools ($\bar{x}$= 4.20) and the test point average of the students in the control group where the course was taught in accordance with the current curriculum $\bar{x}$= 3.12; t= 3.988, p<0.05. Accordingly, it is seen that the calculated effect size is at a high level (d = 1.31). Therefore, it can be concluded that utilizing Web 2.0 tools in the social studies course improved the experimental group's students' scores on the technical sub-dimension of the digital literacy scale.

Do the students in the experimental group's cognitive sub-dimension of digital literacy skills differ from those in the control groups in a way that is statistically significant in favor of the experimental group? Findings related to this sub-problem are shown in Table 6.

Table 6

Digital Literacy Scale Cognitive Sub-Dimension Results

Groups	n	$\bar{x}$	s	t	sd	p	cohen d
Experimental	20	4.07	0.79				

				3.480	28.6	0.002	1.14
Control	18	2.88	1.23				

*p< .05

As shown in Table 6, there was a significant difference between the cognitive sub-dimension test average score of the students in the test group in which the courses were conducted with Web 2.0 tools ($\bar{x}$= 4.07) and the test point average of the students in the control group, where the course was taught in accordance with the current curriculum $\bar{x}$= 2.88; t= 3.480, p<0.05. Accordingly, it is seen that the calculated effect size is at a high level (d = 1.14). In this case, it can be concluded that integrating Web 2.0 tools into the social studies curriculum had a positive impact on the experimental group students' scores on the digital literacy scale's cognitive sub-dimension.

Is the social sub-dimension of students' digital literacy skills in the experimental group different from students' social sub-dimension in the control group in a statistically significant way that and favors the experimental group? The findings related to this sub-problem are shown in Table 7.

Table 7

Results of the Social Sub-Dimension of the Digital Literacy Scale

Groups	n	$\bar{x}$	s	t	sd	p	cohen d
Experimental	20	4.30	0.63	4.598	36	0.000	1.47
Control	18	2.94	1.13				

*p< .05

As seen in Table 7, there was a significant difference between the social sub-dimension test average score of the students in the test group in which the courses were conducted with Web 2.0 tools ($\bar{x}$= 4.30) and the test point average of the students in the control group where the course was taught in accordance with the current curriculum $\bar{x}$= 2.94; t= 4.598, p<0.05. Accordingly, it is seen that the calculated effect size is high (d=1.47). In this case, it can be said that using Web 2.0 tools in the social studies course contributed positively to the scores of the experimental group students in the social sub-dimension of the digital literacy scale.

Digital Literacy Abilities of Students

Does the experimental group of students in the seventh grade social studies class show a statistically significant difference between the pretest and posttest results on the digital literacy abilities scale? Findings relevant to this sub-problem are displayed in Table 8.

Table 8

Experimental Group Digital Literacy Scale Pre-Test Post-Test Results

Test	n	$\bar{x}$	s	t	sd	p	cohen d
Pre-test	20	3.33	0.91				
				3.030	19	0.007	0.9
Post-test	20	4.02	0.52				

As shown in Table 8, there was a significant difference between the experimental group students' pre-test mean score ($\bar{x}$= 3.33) and post-test mean score ($\bar{x}$= 4.02) when the courses were done using Web 2.0 tools (t= 3.030, p<0.05). Accordingly, it is seen that the calculated effect size is at a high level (d = 0.9). In this case, it is seen that using Web 2.0 tools in the social studies course has a positive effect on students' digital literacy skills.

Does the attitude sub-dimension of the digital literacy skills scale show a statistically significant difference between the pre-test and post-test results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course? Findings relevant to this sub-problem are displayed in Table 9.

Table 9

Experimental Group Digital Literacy Scale Attitude Sub-Dimension Results

Test	n	$\bar{x}$	s	t	sd	p	cohen d
Pre-test	20	3.17	0.96				
				2.690	19	0.015	0.8
Post-test	20	3.88	0.71				

As can be seen in Table 9, there was a significant difference between the attitude sub-dimension pre-test mean score ($\bar{x}$= 3.17) and the post-test mean score ($\bar{x}$= 3.88) of the students in the experimental group in which the courses were conducted using Web 2.0 tools (t= 2.690, p<0.05). Accordingly, it is seen that the calculated effect size is at a high level (d = 0.8). In this case, it can be said that using Web 2.0 tools in the social studies course contributed positively to the scores obtained from the attitude sub-dimension of the digital literacy scale.

Does the technical sub-dimension of the digital literacy skills scale show a statistically significant difference between the pretest and posttest results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course? Findings related to this sub-problem are shown in Table 10.

Table 10

Experimental Group Digital Literacy Scale Technical Sub-Dimension Results

Test	n	$\bar{x}$	s	t	sd	p	cohen d
Pre-test	20	3.50	0.87				
				3.137	19	0.005	0.9
Post-test	20	4.20	0.50				

As shown in Table 10, there was a significant difference between the technical sub-dimension pre-test mean score ($\bar{x}$ = 3.50) and the post-test mean score ($\bar{x}$= 4.20) of the students in the experimental group in which the courses were conducted using Web 2.0 tools (t= 3.137, p<0.05. Accordingly, it is seen that the calculated effect size is at a high level (d = 0.9). In this case, it can be said that using Web 2.0 tools in the social studies course contributed positively to the scores of the students in the technical sub-dimension of the digital literacy scale.

Does the cognitive sub-dimension of the digital literacy skills scale show a statistically significant difference between the pretest and posttest results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course? Findings related to this sub-problem are shown in Table 11.

Table 11

Experimental Group Digital Literacy Scale Cognitive Sub-Dimension Results

Test	n	$\bar{x}$	s	t	sd	p	cohen d
Pre-test	20	3.20	1.14				
				2.807	19	0.011	0.8
Post-test	20	4.07	0.79				

As given in Table 11, there was a significant difference between the cognitive sub-dimension pre-test mean score ($\bar{x}$= 3.20) and the post-test mean score ($\bar{x}$= 4.07) of the students in the experimental group in which the courses were conducted using Web 2.0 tools (t= 2.807, p<0.05). As a result, it can be observed that the estimated effect size (d = 0.8) is at a high level. In this case, it can be said that using Web 2.0 tools in the social studies course contributed positively to the students' scores in the cognitive sub-dimension of the digital literacy scale.

Does the social sub-dimension of the digital literacy skills scale show a statistically significant difference between the pretest and posttest results of the students in the experimental group who created Web 2.0 tools in the seventh-grade social studies course? Findings related to this sub-problem are shown in Table 12.

Table 12

Experimental Group Digital Literacy Scale Social Sub-Dimension Results

Test	n	$\bar{x}$	s	t	sd	p	cohen d
Pre-test	20	3.47	1.16				
				2.435	19	0.025	0.8
Post-test	20	4.30	0.63				

As shown in Table 12, there was a significant difference between the social sub-dimension pre-test mean score ($\bar{x}$= 3.47) and the post-test mean score ($\bar{x}$= 4.30) of the students in the experimental group, in which the courses were conducted using web 2.0 tools (t= 2.435, p<0.05). Accordingly, it is seen that the calculated effect size is at a high level (d = 0.8). In this case, it can be said that using Web 2.0 tools in the social studies course has a significant effect on the social sub-dimension of students' digital literacy skills.

Discussion and Conclusion

In the research, some Web 2.0 tools (Canva, Renderforest, Edmodo, WordArt, YouTube and StoryJumper) were used to process four achievements in the seventh grade social studies Global Connections learning field. In conclusion, it was shown that using Web 2.0 tools had a favorable impact on students' digital literacy abilities. This study examined how using Web 2.0 tools in social studies instruction in the seventh grade of a secondary school affected students' digital literacy skills. It was concluded that there was a statistically significant difference in favor of the experimental group, both in general and in each of the attitude, technique, cognitive and social sub-dimensions of the digital literacy scale, between the students in the experimental group and the students in the control group, where the social studies course supported by Web 2.0 tools was taught. The results of the pre-test and post-test for the students in the experimental group also showed a significant statistical difference favoring the post-test.

This research was conducted to determine the effects of using Web 2.0 tools in seventh grade social studies teaching on students' digital literacy skills. As seen in the findings of this study, employing Web 2.0 tools has been found to improve students' digital literacy skills. Both the experimental group and the control group's test scores on the digital literacy scale were compared. It was concluded that the experimental group significantly outperformed the control group in all four of the scale's subdimensions—attitude, technique, cognitive ability, and social ability—as well as the overall scale. Additionally, it was determined that the experimental group students' pre- and post-test results differed significantly.

A review of the literature reveals that research has been done on how Web 2.0 tools affect digital literacy. The findings of this study are consistent with studies that found that the employment of Web 2.0 tools and digital tools throughout the educational process significantly improves students' digital literacy skills (Baki, 2022; Cun, 2022).

Besides, in most of the studies (Colwell, Hunt- Baron, & Reinking, 2013; Ekemen, 2022; Gürleroğlu, 2019; Korkut, Özpir- Mantaş, & Yıldırım, 2021; Tsvetkova, Ushatikova, Antonova, Salimova, & Degtyarevskaya, 2021), it has been concluded that although the use of Web 2.0 tools in the teaching process improves students' digital literacy skills, it does not cause a statistically significant difference. Studies have shown that, in the absence of a large difference, technological infrastructure deficiencies, reliance on previously acquired superficial information, difficulty to adjust to using digital technologies, and issues with the implementation process are all effective. However, studies have found that the adoption of 21st century capabilities by students and the growth of their digital literacy skill levels are significantly influenced by the usage of Web 2.0 tools in the implementation process.

Studies (Efe, Turan, & Ünsal, 2022; Gündüzalp, 2021; Jose, 2021; Pürbudak, 2020) have determined that the teaching process carried out using Web 2.0 tools increases sharing among students and contributes to a collaborative learning environment. It was observed that the Web 2.0 tools used in the implementation process of this research improved cooperation among students and contributed to the creation of common products. It has been noted that Web 2.0 tools used in the processing of the Global Connections learning area of the seventh grade social studies course can also positively contribute to the development of students' digital citizenship skills. This supports the findings of the International Society for Technology in Education (ISTE), 2008 and Nebel, Jamison, & Bennet, 2009.

It was seen that the students did not have difficulty using Edmodo which is the main Web 2.0 tool of this research, it contributed to the socialization of the students and the development of their extracurricular communication, and the application process was the virtual classroom. In the literature, it has been reached that Edmodo is a social learning tool that supports social participation (Balasubramanian, Jaykumar, & Fukey, 2014), is reliable for students (Alemdağ, 2013; Weber, 2012), and creates a social learning environment with its easy use (Bicen, 2015; Shockney, 2013). Another result is that it is effective in ensuring the participation of students with low classroom participation in crowded classroom environments (Egüz, 2020; Rogers, 2011), and contributes to active participation and learning (Thongmak, 2013). The increase in scores derived from the social sub-dimension of the digital literacy scale utilized in the research is supported by both the research findings and studies in the literature.

It has been concluded that the Renderforest tool used for the acquisition of "S/he gives examples to the organizations of which Türkiye is a member" is an effective tool for the acquisition. The students demonstrated success in making video animations, communicating the material in short and creative ways, and developing collaboration and production skills. In the literature, it was reached that the Renderforest tool is suitable for my learning (Umar, 2022), it contributes to the development of students' thinking skills in creating educational video animations (Almelweth, 2022) and when used together with the problem-based learning method, it has a positive effect on the development of students' problem solving skills (Sari, & Fathoni, 2022). The findings confirm the improvement in the posttest scores on the study's digital literacy scale.

It has been noted that the StoryJumper tool which is used for the acquisition of "S/he recognizes the economic regions and institutions with which Türkiye has a relationship" supports the collaborative learning of the students and improves their

digital competencies. In the literature, StoryJumper is used to increase interaction, develop multiple skills (Fansa, 2020), improve students' digital competencies and self-confidence (binti Mohammad, & Yamat, 2020), and provide an innovative learning environment (Kulaca, 2023; Nurlaela, Ilham, & Lisabe, 2022; Shuguli, 2023) an effective tool, supporting the results of this research. It is thought that the results also support the increase in the scores obtained from the technical sub-dimension of the digital literacy scale.

It has been observed that the WordArt tool used to acquire "S/he questions the stereotypes s/he has towards various cultures" is an efficient tool in revealing students' perceptions of various cultures and groups, their thoughts in their cognitive structures, and improving their writing abilities. The two word cloud design tools, WordArt and WordCloud have been found to be helpful for summarizing the main idea of texts in a variety of studies (Calle-Alonso et al., 2018; Hearst et al., 2020; Zhu, Zang, & Tobita, 2020). Furthermore, it has been concluded that since the interfaces are easy, students can easily adapt to them and help create an eye-pleasing visual design. During the application process of this research, it was observed that students enjoyed using WordArt, that it was a useful tool for converting texts into keywords, and that WordArt contributed to summarizing the subject. In the same way, it has been observed that the Canva tool for the acquisition of ”S/he develops ideas for solving global problems together with friends" also contributes to revealing the thoughts formed in the cognitive structures of students, increasing motivation to class, developing sensitivity to global problems, developing empathy skills for world problems, during the implementation process. Studies in the literature (Erdal, 2021; Kulaca, 2023; Kyllonen, Lipnevich, Burrus, & Roberts, 2014; Le, Bo, & Nguyen, 2023; Ramadani, Arizal, & Rahayu, 2023; Utami, & Djamdjuri, 2021). Suggest that Canva tool helps students' writing skills, increasing motivation towards learning. It has been concluded that it supports users and offers practical solutions to users with its rich content. It was determined that the rise in the digital literacy scale's cognitive and affective sub-dimension scores, as well as the statistically significant difference, supported this claim.

Implications

Within the context of both the application procedure and the data gathered following the application of the research, some suggestions can be stated as follows:

- This research which was carried out for the seventh-grade social studies course "Global Connections" learning area can also be applied to other learning areas and acquisitions.
- This research which was conducted at the seventh-grade level can also be conducted at other grade levels and in different learning areas and the results of the use of Web 2.0 tools in social studies teaching can be evaluated.
- This research which is designed as a quantitative research method with a quasi-experimental design can be carried out as a mixed method research with qualitative research methods such as case study and action research.
- Web 2.0 tools can be used for gaining 21st century skills in both social studies courses and after-school activities.
- It is possible to implement activities that enhance students' digital literacy by incorporating various Web 2.0 tools into various subject areas.

Statement of Responsibility

While İlhan Kulaca conducted the application data collection and analysis of the study (%40), Hakkı Yazıcı contributed to the theoretical framework, the methods and results section (%30). Tuğba Selanik Ay participated in the discussion of results, the suggestions section, and the reporting process (%30).

Conflicts of Interest

The authors certify that they have no conflicts of interest.

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Appendices

Appendix 1

Sample Photos of the Work of the Experimental Group Students