Usage of Digital Comics in Distance Learning During COVID-19

Genç Osman İlhan (iD)
Yildiz Teknik University, Turkey

Gamze Kaba (iD)
Yildiz Teknik University, Turkey

Maide Sin (iD)
Yildiz Teknik University, Turkey

www.ijonses.net

International Journal on Social and Education Sciences (IJonSES) is affiliated with
International Society for Technology, Education, and Science (ISTES): www.istes.org

Usage of Digital Comics in Distance Learning During COVID-19

Genç Osman İlhan, Gamze Kaba, Maide Sin

Article Info	Abstract
	The aim of the study is to reveal the effect of digital comics material on students' academic success, their views on distance education, course and digital comics. In the study conducted during the 2019-2020 academic year and the pandemic, digital comics material was created in the Pixton design program for the aim of the acquisition of "different management styles in terms of basic principles of democracy," in the learning area of active citizenship in the 6th grade Social Studies curriculum. It is known that the comic book, which has no time and place limits, provides easy and fast access to information, prepared within the framework of distance education, provides motivation to individuals and increases interest in the course in accordance with psycho-social development. The study was designed as a mixed method. The quantitative dimension of the research was designed as a single group experimental study and the prepared academic achievement test was applied before and after the study. In the qualitative dimension, phenomenology was applied and the data were collected through audio-recorded interviewing. The quantitative study group of the research consists of 10 students, and the qualitative phase consists of 5 students. The obtained data were analyzed through the statistical program in the quantitative phase and content analysis in the qualitative dimension. As a result of the research, it was concluded that the use of digital comics in distance education increases the success and helps to develop positive behaviors towards the course.

Introduction

With the Pandemic announced by the World Health Organization on March 11, 2020, the new process of adaptation to life started after radical changes in the world and new normal revealed after it. The pandemic process has shown the society that defense can be held all and only with science, and the effectiveness of protecting the society under the roof of unity and solidarity has been gained in the name of social health awareness instead of individual benefits. The pandemic affected the whole world and all areas; however, it certainly played an active role in the movement and adaptation of the education that will lead the next generation. With the pandemic, distance education, which is a new educational inspiration for the 21st century, has become a part of the lives of students who have been receiving education all over the world.

Education in the Turkish Education System is divided into two main branches. While there is formal education

in one branch, there is non-formal education in the other. The formal education covers pre-school, primary education, secondary education, special education and higher education, while non-formal education includes vocational training, apprenticeship training, literacy, social and cultural life support trainings (Akzüzüm, 2017; Görgen, 2014; Akyüz, 2012). Distance education process in Turkey has gained momentum with Anadolu University Open Education Faculty in 1982, this process has continued by including secondary and primary education (http://www.aol.meb.gov.tr, http://www.aio.meb.gov.tr).

Distance education is the education that can be held everywhere through technological connections without any time and place limitation. Distance education, which is given through modern and new technologies and the internet and can continue lifelong, ensures that the educational needs of the information society formed after the industrial revolution are met (Alkan, 1998, cited in Demiray, Alkan, 1996; Gökçe, 2008; 2013; Uluğ, and Kaya, 1997; Gelişli, 2015; İşman, 2005; Kırık, 2014; Yalçınkaya, 2006; Ergüney, 2015; Bozkurt, 2017; Karakeçeli, 2019). Distance education has benefits and limitations. The benefits can be stated as providing education opportunity for those who do not reach formal education opportunities, being no time and place limit, continuing lifelong, facilitating the implementation of education programs with e-education, providing education opportunity to the mass, contributing to individual learning, individual's gaining learning awareness and discipline for her/his own education, benefiting from many experts and using technological developments. The limitations of distance education are as follows; individuals' having problems in face-to-face communication, not being able to plan working and resting time in daily life or having difficulties in complying with the plan and being fond of technology. Distance education has caused anxiety problems, inequalities among children due to access, risk of internet addiction and evaluation problems (Sahin & Shelley, 2020). Distance education cannot provide support to students who do not have the necessary study discipline in individual education (Ulu, & Kaya, 1997 cited in Oktay, 2001). In addition to conventional teaching methods in distance education, individuals are given the opportunity to learn by creating multiple learning environments. In this context, the necessity of materials digitally integrated to be used in distance education arises.

Countries designate their education programs in order to educate citizens to adapt to the era they are in, qualified, cooperate with the state, and participate in democracy (Kara, Topkaya, & Şimşek, 2012, 149). The course which is given intensive citizenship education is social studies course. The social studies course covers the human being, the relationship between the human being with the society and the interaction of these two with the environment, and contributes to the citizenship awareness of individuals and thus the formation of society (Doğanay, 2008). According to Barr, Barth and Shermis (1977, p. 69), social studies can be defined as "to combine the knowledge and experiences about human relations for the purpose of citizenship education" (cited in Doğanay, 2008, 79).

Social studies course is an area where there are plenty of abstract concepts in its scope. In order to concrete abstract subjects, it is very important to use teaching tools and materials. Concrete materials are often applied in order to ensure that the teaching of abstract concepts such as democracy, freedom, human rights and justice are qualified and permanent (Sözer, 1998; as cited in Yaşar & Gültekin, 2009). In this context, it is necessary to use appropriate, target-specified, accurate teaching tools and materials in education. Material use has been found

effective in acquiring targeted skills and gains, transferring abstract concepts, and making teaching permanent has been confirmed by many educators and researchers (Çelikkaya, 2017; Alkan, 1990; Yaşar & Gültekin, 2009; Meydan, 2018).

Today, it is important to prepare the materials used in education by integrating them into the digital age as well as in every stage of life. The materials prepared by considering the characteristics of the students of the age with technology integration contribute positively to the development of students' academic achievement, motivation and thinking skills (Brown, 2007; Ebuara, 2012; cited in Soysan, 2018). Materials prepared by considering the 21st century student characteristics have the demanded characteristics. These characteristics are materials' being close to the students' daily life, using updated techniques, providing learning with fun. Moreover, it is known that keeping the students' attention and interest high for a long time is very difficult. In order to keep their focus on the course during the class, attention-grabbing materials should be preferred. Also, they should be proper to the learning approach of the age. In addition, teaching materials' being pedagogical based is among the required features (Şentük, 2020).

While the difficulty of keeping students' attention and interest in the classroom for a long time is obvious, the difficulty of keeping the motivation and interest of the student in the course increased in the distance education process, which has been experienced for a long time due to the pandemic. While modern education systems replace the conventional education approach, it is important that the materials prepared in order to support learning are prepared according to the digital age and teachers who have the competencies of the 21st century design educational materials suitable for the subject. It is highlighted that the importance of materials has increased in distance education (Kimmel, Carpinelli, Spak & Rockland, 2020). One of the materials suitable for education that meets the qualifications of the age in the digital environment is educational comics.

Rodolphe Töpffer, known as the father of comic books, defined the comic book as "a sequential communication art tool on a paper with text and picture, one being non-functional without the other" (Sargologos, 2011; as cited in Yağlı, 2017). In comic book definitions, which are accepted as the 9th art in the world, Eisner (1985) emphasized that it is sequential art, and Mc Clould (2019) points out that there are sequential visual or different images in the adjacent order. The use of comics as an educational material has been increasing in recent years. Some of the studies on the subject of comics in education are as follows; Brown, (1997); Weber et al., (2013); Orçan, (2013); Esmer, (2014); Topkaya, (2014); İlhan, (2016); Gürsoy, (2018). The study results of Topkaya and Şimşek (2015), İlhan (2016), Ünal (2018), Şentürk, Ö. Ç. (2020) and Şentürk, M. (2020) show that comics books increase academic success in education.

Educational comics are one of the materials designed in a digital environment and suitable for use in the learning environment. At the same time, they can be applied for different subjects and gains in the field of education and can attract students' interest, increase motivation and make learning fun. According to the results of the researches prepared and applied in the digital environment, educational comic materials have educational competencies as follows; it increases the permanence of learning, enables learning with fun, increases academic success, appeals to more than one sense organ due to its being given with the harmony of visual and text

(Topkaya, 2014; İlhan, 2016; Mutlu, 2019; Kurt, 2019; Şentürk, Ö. Ç., 2020; Şentürk, M., 2020). As a result of this, it facilitates the learning of abstract concepts.

The use of educational comic material is predicted to help educators, especially during the pandemic period and in distance education. In this direction, the aim of the study is to reveal the effect of digital comics used in the 6th grade level Social Studies course "Management Styles" topic which is in the field of effective citizenship learning on the students' academic success and their opinions on distance education, the taught course and digital comics. In this context, the sub-problems of the study are as follows:

● Does the subject of management styles in social studies courses taught with comics create a significant difference between the academic achievement pre-test and post-test scores of students?

● What are the opinions of the students about digital comics, which are used in teaching the subject of management styles, and about social studies courses and distance education?

Method
Study Design

In the study, a mixed model research design in which qualitative and quantitative research is used together was applied. The mixed method is defined by Creswell (2019, 2) as "a research approach used in the field of social and behavioral sciences in which the researcher integrates both quantitative data (close-ended) and qualitative data (open-ended) in order to understand research problems, and then draws conclusions using the advantages of integrating these two data sets". Mixed-method study was adopted in this study to disable the negative sides of one group pretest-posttest design applied in the quantitative phase so that the qualitative data would enable the researchers make better inferences.

Quantitative research enables the big picture to be seen and while giving the chance to generalize, it allows the data to be collected about each group (Neumann, 2007; cited in İlhan, 2016, 44). In this study, quantitative methods were used for the purpose of measuring the effect of using digital comics on students' academic achievement in social studies courses. In the quantitative dimension of the research, one group quasi-experimental model was used and the pre and post achievement tests were applied before and after the education process with digital comics.

Qualitative research is a method which is often used in sciences such as anthropology, psychology and sociology, where the positivist approach is not sufficient. It uses observation, interview and document analysis methods to solve the problem of the research. Herewith, it enables problems to reveal that were previously unknown or unnoticed. Qualitative research is a branch of science that aims to solve the secrets and limits of human beings while examining social structures in depth (Baltacı, 2019, 369-370). Providing an opportunity for in-depth analysis and interpretation, the qualitative research method is conducted with less participant groups. The qualitative research method, which does not worry about generalization, also functions to deepen the findings that the quantitative research points out. The design in which the qualitative research method performs this function and first quantitative and then qualitative methods are used is defined as an explanatory mixed

design (Creswell, 2019). In this study, first, quantitative methods were used for the purpose of understanding the effect of digital comics on academic achievement. Thereafter, a qualitative method was used to reveal students' opinions on digital comics, social studies courses using digital comics and distance education.

Participants

The sampling of the quantitative dimension of the study consists of 10, 6th grade students (5 boys and 5 girls) studying at a private school in Istanbul. The school was chosen because the researcher could reach there easily and the applicability of the research process could be increased. By this way, an appropriate sampling method was used in the research. Since the school was a private one, the number of students in the class was limited and so, all students included in the study. In the qualitative dimension of the study, two students with higher and lower achievement levels, respectively and a student with a medium level of success were selected by using the maximum variation method from random sampling methods. Of the participants in the qualitative dimension, 3 are females and 2 are males.

Research Process

The study was started to be conducted in the distance education process covering the 2019-2020 academic year due to pandemic. In the study, firstly, an academic achievement test which was developed by the researchers by taking five expert opinions, three of who were from Social Studies and the other two from Turkish language fields. First of all, academic achievement pretest was applied to the study group, and then an 80-minute-Social Studies Course on the Zoom application was conducted with the study group for one day a week for three weeks. Social Studies course, which was taught in a single group experimental study, was carried out through digital comic material in addition to the textbook. Since the teacher, who has been teaching the social studies course since the beginning of the term, is also one of the researchers, the students did not feel like an outsider during the application. The researcher is in the role of a participant. In order for the students of the study group not to encounter the comic book for the first time during the course, the digital comic material prepared was sent to the students by email before the Social Studies course started. The aim of sending the comic book material before the course is for students to have the opportunity to examine the material previously. In the research, the academic achievement posttest was applied after the course was taught with comics. At the end of the study, in addition to the quantitative data, a semi-structured interview was conducted with 5 volunteer students out of 10 participants in the study by a video call on the digital media via the Skype application.

Research Material

For creation of the digital comic, which is the key element of the study, a scenario suitable for the topic of Management Styles within the scope of the Social Studies Course was written. Researchers received training about the nature and components of the comic book from comic book experts. The scripting started with the creation of the main character. The main character is a friend who is at the same age with students and whom they can meet in their daily lives and is equipped with the skills and values aimed to be gained within the

framework of MONE 2018 Social Studies Curriculum. The main character Bilge has similar physical and psychosocial characteristics with her peers. There are 7 supporting characters to assist the main character named Bilge in the prepared digital comic. In the comic book prepared, a special care was taken to ensure that the places and environments of the supporting characters contain reality elements. The scenario, prepared in prose form, was created with a sketchy pencil drawing after dividing into panels. With this pencil drawing, the positions of the elements such as environment, object, sound, light, space, dialogue, mimic and perspective to be found in the panels were determined. The main reason for doing this is that the transition between panels can be smooth and continuous. The comic book material created with this method transferred the information taught to the students, not directly, but by enabling them to read critically, giving the reader the opportunity to think in humorous elements in silent panels. The digital comic material prepared for the research was created through the digital comic and cartoon design program called Pixton (https://www.pixton.com/login). While the educational comics were prepared within the program, since the objects and environments which belong to Turkish cultural elements were limited due to the foreign origin of the program, all the necessary elements took their place in the panels of the comic book prepared through the Photoshop program. The digital comic material prepared was composed of 67 panels in total and the entire comic book was used in the Social Studies course, which was taught with digital comic material. For students' better analyzing the topic of Management Styles with digital comics, the main character Bilge goes to the place where each management style is applied using a time machine called "gırgır".

The comics were created in reference with the criteria presented in Ak, Erdoğan and İlhan (2020)'s study. Three sample panels from the research material are distributed above. The language of the digital comics is in parallel with the language the students use in their daily lives (Keskin & İlhan, 2020). Also, the topic of the comics was chosen specifically from their daily lives and the characters were created similarly to the people they might encounter in their lives.

In the comics, each setting was presented with at least three successive panels. As comics could address more than one sense (Temel & İlhan, 2019), the material was developed to address as many senses as possible. For instance, the colors of odors were presented in the comics to address the sense of smell. In addition, the comics were prepared with attention not to include any negative visuals for the psychology of students. Perspective, gestures and sense of humor were included for students to enjoy the comics and have fun while learning.

In the panels above, the information of transferring ruling power is presented. While presenting the necessary information here, supplementary information about good use of language and spelling rules are also demonstrated implicitly. This way, additional learning could be supported.

Data Collection Tools

In order to determine the effect of the use of comics in social studies courses on students' success, an achievement test with 15 questions on the topic of management styles which is in the field of citizenship learning was developed. The achievement test consisted of 15 multiple choice questions and was developed by researchers, with the reliability score as .89 (Cronbsch's alpha=.89). While developing the achievement test, the objectives of the unit were and the opinions of the experts were taken into consideration. Achievement test was applied in the form of pretest and posttest before and after the topic of Management Styles was taught. The pretest-posttest method provides clues about the effect of an application by comparing the data before and after it (Creswell, 2019). In this study, the pretest-posttest method was used in order to measure the effect of digital comic material on academic success. In the qualitative dimension of the study, a semi-structured interview form was used in order to understand how students evaluate the comics used in the topic of Management Styles, the social studies course taught by using comics, and the distance education. the interviews took 30-42 minutes. Semi-structured interview forms are one of the most frequently used interview tools that both provide flexibility to the researcher and serve to the research purpose of the interviews (Patton, 2002). In this study, semi-structured student interview forms, which were prepared by the researchers and taken the opinions of two experts from the fields of Educational Sciences and Social Sciences Teaching, were used.

Data Analysis

Since the analysis of the quantitative dimension of the study included the comparison of the achievement test scores applied in the form of pretest and posttest, it was subjected to statistical analysis. The Kruskal Wallis test,

which is one of the non-parametric tests, was used since the sample of the study was less than 30 people (n= 10) and it did not show a normal distribution. The Kruskal Wallis test is used to reveal whether there is a statistically significant difference between the two related tests by comparing the data rankings. Unlike the T test, the Kruskal Wallis test helps to obtain correct results in non-parametric measurements by making these comparisons with rankings.

In the qualitative dimension of the study, data analysis was conducted by content analysis method. Content analysis is an analysis method used to understand repetitive themes in qualitative research (Patton, 2002). Similarly, in this study, the content analysis method was used to find repetitive themes in students' opinions on digital comics, social studies courses and distance education. Transcripts of the interviews were taken first, then they were coded and themes were determined. The three researchers involved in the study in order to increase the reliability of the data analysis determined the codes and themes independently and analyzed the data.

Findings

Digital Comics and Academic Success

The achievement test developed by the researchers was used to measure the effect of digital comics on students' academic success. The students were 6th graders, the lesson was Social Studies course and the topic was "Management Styles." The students took the test before and after the use of digital comics, and the results were compared.

Wilcoxon Signed-Rank Test was applied to compare the pre-test and post-test scores of the students. The Wilcoxon Signed-Rank Test, which is used to compare paired test scores, is a non-parametric test and is used to compare related measurements. The reason for using a nonparametric test in the study is that the sample size is below 30 (n = 10) and the sample group does not show a normal distribution. When the normality test of the sample group is performed, it is seen that Shapiro-Wilk values are significant for the posttest, in other words, the sample group does not show a normal distribution (ppretest=.247, pposrtest=.008). Additionally, when the skewness values of the sample group are examined, it is seen that they are not between 0 and 1, which indicates that the sample does not show a normal distribution (Skewness=.747, Kurtosis=1.4).

When the results of the Wilcoxon Signed-Rank Test are examined, the first indicator that draws attention is the average of the students' achievement scores. Considering the averages of these scores, it is seen that the digital comics book positively affected the academic achievement (Medpretest=8, Medposttest=14.5). The fact that the posttest average scores are higher than the pretest average scores shows that the use of digital comics positively affected the academic success of the students in social studies courses. However, in order for this finding to be taken into account and to be generalized, the difference between posttest and pretest should be statistically significant. When the significance level of the Wilcoxon Signed-RankTest is examined, it is seen that the difference between pretest and posttest is statistically significant (T=36, z=-2.52, p=.012<.05). In other words, digital comic material significantly and positively affected students' learning in Social Studies courses.

Digital Comics and Student Opinions

In the qualitative dimension of the study, the data were obtained from 5 people using a semi-structured interview form via Skype. Audio recordings were taken during the interviews and then the analysis part was started. During the interviews, students' opinions about distance education were taken. It is understood that almost all of the participants have negative opinions about distance education. In particular, participants mentioned the communication style as a problem. One of the participants, B.E.Y stated: "I think that distance education did not contribute much to students. For example, when a teacher is teaching a subject, we cannot ask the part we do not understand. So we had such a problem". He also stated that he could not communicate properly and that easy and effective face-to-face communication could not be achieved in distance education. Of course, there are not just human-driven problems in distance education. Participants outlined the program's updating problems, the problems of the connected devices such as computer, tablet, smart phone, etc., especially screen freezing or general network infrastructure problems, are the triggers of this situation. Another negative situation that the participants mentioned about distance education is the comfort of the home environment. E.S.S expressed his feelings as: "I think distance education has both good and bad sides. It is bad, because we are away from school, I am at home and I get bored every day. But since I am at home, I play lots of games, I watch TV series. This is the good side".

The opinions of the participants about the course with digital comics are that it is fun. All of the participants stated that the course was more enjoyable and interesting with this material. According to the most given answers, comics broke the monotony of daily life and courses, prevented boringness and made the lesson more enjoyable and interesting. It is seen that comics have broken the perception of 'boring' for the courses of formal and distance education. M.B.K evaluated the course taught with comic book material as: "It was very nice, it was too good. I went back to the past too. It was fun, I did not realize how time passed, we did it once, and we should do it again, sir". Another participant, A.Z said: "Teacher, the course taught with this comic book was much more fun and catchy. It widened our imagination. Also, this comic adapted us more to the course."

Another participant, B.E.Y. 's opinion about the course taught is; "I think it was very enjoyable. In short, we learned how to make a comic book. We saw an example of how to use comics in course content. In other words, we saw how to look through the eyes of the person who wrote the comic book. It was so enjoyable and we evaluated the comics at the end of the course, which made the course much more enjoyable. I think that course was very good." The participant experienced learning by having fun through the comic book which is an educational material. The same participant, B.E.Y. evaluated the material in the course: "Well, the characters' being animated like this makes the course catchy, and the topic can be visualized in mind better. For example, it's like something I watch in a movie or theater. That's why it becomes catchier." Participants also stated that they want the use of comics they like in this application to be used in other courses. E.C., one of the participants, said: "Yes, I would love it to be used. If the 8th grade History of Revolution course is taught with comics next year, I would have so much fun," and she stated that the comic book application will make next year's intense course of "History of Revolution" and exam year fun. Another participant, B.E.Y., said: "I would like it to be used because it was fun and entertaining. I have not thought about any topic before, but, for example, proverbs

or idioms that have different meanings can be told with comics." With this expression, the student aims to make the words concretized with comics and facilitate learning by providing a good, fluent and understandable use of Turkish as well as making the topic of meaning easy. One of the participants, E.S.S. expressed his opinion as: "It would be very good to be used in the other courses as well. Even normal textbooks have illustrated stories, but they are too short. I think comic books would be better instead of them." Comic book which is the educational material is preferred by its conveying social and cultural norms to its reader with humor and by its gripping feature.

Another finding that comes to the fore in the interviews is the evaluations made by the participants about the comic book material prepared (The views about the course taught with comics and the opinions for the comic book have been overlapped. This is because students' opinions of the course are closely related to their views on the comic book). Most of the students define digital comic material as a fun learning tool. The catchy scene that is in the minds of the majority has been the "smelling head" frame in the comic book as a comedy element. E.C. from the participants said: "The comic book used in the lesson was very entertaining and informative. For example, there was the smelling head scene. I learned that the king has unlimited powers, but the people must have a right to talk for democracy as well." The reason why the comic book material prepared is fun and informative is that it appeals to all five senses. Participants who are introduced to the comic book material see the comic book, sometimes hear the sounds in the comic, sometimes feel a smelling head with green smoke and flies, and sometimes feel the taste and what is experienced. One of the participants, B.E.Y expressed: "Teacher, what remained in my mind in the comic book was the arrogance of the king. The king hardly thought about his people, he only did what he wanted. The king considered himself superior to everything and everyone. So, what is constitutionalism, what is monarchy is very clear in my mind". A similar fact can be seen in the answer given by one of the participants as follows; M.B.K. mentioned this as: "Let me think, teacher, it was fun for the child to travel with a time machine. The child goes back and forth to the past. To me, the most fun part was the child's traveling. In the past, I had not understood these topics at all, but they became more understandable and permanent with comics. It is said that the visual things become more permanent."

When the participants' reading the comics were evaluated, it was determined that most of them had not read comics before. E.C., one of the participants, expressed the situation by saying: "No. I have never read it, teacher, I asked my elder brother about comics once, and he recommended me to read it only in my free time." This interpretation is a prejudiced critique of the comic book without understanding its nature. When the opinion of the participant after the course with comic books is received, it is seen that he perceived the comic book as a spare time material before the application and then changed this opinion after the application. In addition, it was noticed by the participant that the comic book is not a futility exercise because it appeals to many fields. B.E.Y. from the participants said: "I had not read a comic book before. It was the first time I encountered comic books in your course. I was curious about the comic book, but I did not read it because none of my teachers suggested it. Also, reading the comic book was very easy, the texts on the pictures seem to vitalize what we read. In other words, it is very pleasant and beautiful because it gives more support to narration. My opinion is this way." In this regard, it can be said that the comics have a triggering force for the language and they also concretize the words. In addition to these situations, the opinions of the participants about their experiences with their parents

related to the course taught with digital comics are that they received positive reactions. One of the participants, E.C. mentioned about his parents' positive opinions about the comics: "Yes, teacher, I explained this course to my family. They also liked it. We even looked at a comic book appropriate for my age, sir." Another participant, E.S.S. told what he experienced as: "When you started the course at Zoom program, my mother was watching from my bedroom door first. When I opened the comic book, she came in and listened to the course with me. She even told me to inform her if it happens again, as it was a very enjoyable lesson. We had a break from comic books, but after that course, we ordered comics from the internet again to read together and discuss it." Based on these expressions, it is possible to see that the comic book is close to human and is natural and appeals to all ages. Moreover, it can be said that the parents look more positively on the tools that enrich the course and facilitate the learning.

Discussion and Conclusions

With the COVID-19 pandemic emerging in the world, countries have started the compulsory distance education process. This compulsory process has caused quite different experiences, especially for students in the younger age group. The most common problem faced by the participants in distance education is the communication problem. The study, which was conducted with different age groups in distance education and mentioned the communication problem that students have with their course instructors, which was published by Keskin and Özer Kaya in 2020. A similar communication problem is encountered in a study with science teachers and it was stated that students could not communicate easily with the teacher (Bakioğlu & Çevik, 2020). Moreover, Sarı and Nayır (2020) stated that there are communication problems in distance education; however, this can be considered as an opportunity, and new communication ways and tools should be developed. In addition, there is a study emphasizing the necessity of teachers to carry out an effective communication process in the literature (Bozkurt, 2020).

With COVID-19, the duration of children's playing games started to change, who started to spend more time at home during the distance education process. In the study, the participants stated that they started to play more at home. Another study by Mart and Kesicioğlu (2020) showed similar results. In their study, it was mentioned that children play more and different types of games with their parents at home. Also, the statements of the participants signal the change in students' lives. With distance education, the ways of spending time for students who spend more time at home have differed, compared to their formal education.

In order to increase academic achievement, which is one of the main objectives of teaching activities, the use of materials in education is recommended. In a meta-analysis study about material use in education, it was understood that computer presentations, physical materials, concept maps, comic strips and mixed materials positively affect academic achievement (Kablan, Topan & Erkan, 2013). Although it was found no significant difference between the effects of these materials on academic achievement, the positive effect of material use on academic achievement has parallelism with the findings of this study. Another study shows that the use of digital materials positively contributes to students' learning the periodic table in the Science course (Peker & Taş, 2017). Similar results can be found for the social studies course. The digital game used in the teaching of

the topic of earthquakes positively affected the students' success (Doğan & Koç, 2017). In the study group designed with the experimental and control groups, the course success of the experimental group in which digital games were used was found to be higher than the control group. The prepared digital timetable for the Ottoman Empire in the 17th, 18th and 19th centuries was also found by teachers that it increased motivation, ensured retention in learning, attracted attention and activated different sensory organs (Baloğlu-Uğurlu &Üzen, 2017). In addition, it is seen that the use of digital maps in social studies education has a positive effect on academic success (Bulut & Aktürk, 2013). The aforementioned findings have parallelism with the findings of this study, which is the use of digital material positively affects students' success.

The quasi experimental study by Ünal and Demirkaya (2019) showed that using comics as a material in social studies courses had a positive effect on students' academic success. In the doctoral thesis study of İlhan (2016), it was seen that the use of comics in the social studies course positively affected the students' academic success. In the United States, the comics about the history of Texas used in the social studies course also positively affected the academic success and motivation of the students (İlhan & Oruç, 2019). In addition, literature studies indicate that comics have a positive effect on transferring historical awareness (Yağ, 2016) and gaining a reading habit (Çetin, 2010). These skills are parallel with the findings of this study since they also support academic achievement.

The Constructivist Approach argues that the learning action occurs in the learner's mind and therefore the learner is active in the learning process. In order to increase the effectiveness of learning, it emphasizes the learner's being active, learning with fun and the flexibility that the learner can use their previous experiences. Moreover, in order to enable learning with fun, games and gamification methods are used in education (Özyürek & Çavuş, 2016). Today, learning with fun comes first among the criteria that parents and teachers search for even when choosing toys (Özdemir & Ramazan, 2012).

The importance of learning by having fun is emphasized in distance education, as well as in formal education and it is stated that it is valuable to make student's educational processes fun (Büyük, Uğur, Saykılı & Şahin, 2018). When considered the results of this study, it is seen that digital comics are effective both in making the education process fun and in making distance education fun. When the participant reached the end of the adventure in the comic book, he gained a different perspective and knowledge, and felt a sense of fun. This finding is consistent with the Constructivist Approach principles that the Ministry of National Education determined as basis in 2005 and trends such as games and gamification in education. Additionally, prospective teachers' expectations from the teaching process supported by activities are listed as follows: active participation, increased communication among students, respect for different opinions, the effect of learning, and learning with fun (Kösterilioğlu, Bayar & Kösterilioğlu, 2014). The digital comic material may also provide retention in learning and learning with fun; however, they need to be studied specifically.

Retention in learning is one of the important expectations of both teachers and students. Different teaching methods and materials (Duman, 2013; Demircioğlu & Turan, 2012; Demiralp, 2007) such as collaborative teaching (Koç, 2010), brain-based learning (Çengelci, 2007) have been developed in order to ensure retention in

learning. In the study of İlhan (2016), it was observed that the retention test result of education with comics is higher than the pre-test and post-test. Similarly, students in this study stated that education with digital comics would contribute to retention in learning. Although retention test was not applied in this study, the qualitative findings of the study seem to be consistent with the previous studies.

One of the qualitative findings of the study is that education with digital comics is remarkable. It is also similar to other studies in the literature. The studies of Sones (1944), Tatalovic (2009), and İlhan (2016) also emphasize the attention grabbing side of comics. Using remarkable materials increases the effectiveness of teaching. For this reason, the use of digital comics in education can be encouraged. In addition, the phrase "I went back to the past" (M.B.K) in the statement of the participant shows that the comic book fulfills the concretization of transferring the terms of present, future and past tenses because the characters of the comic are in motion in three main times. Also, it can be said that this application allowed participants to identify the plot in the comic book with the personality traits of the character and see it more clearly (They made comments about the characters and the plot). The developing and changing world makes the use of materials in the classroom environment essential in addition to the textbooks.

Moreover, participants made comments about the visuals in digital comics (can be found in findings section). In this context, it was emphasized that the use of visual material in social studies teaching is very important as in every field of education. In addition to this, it was expressed that comic books concretize abstract subjects and purify them from complexity. Also, participants stated they felt not only like reading a book but watching a movie or theatre. With this expression, the participant has specified that he experienced the effect of the hero who exists in arts such as cinema and theater, on individuals through comics and identified himself with that hero.

Teaching materials are one of the frequently used resources for the effectiveness of education. When properly designed and used, it brings advantages such as increasing the effectiveness of teaching, providing retention in learning, and making the learning process fun. Some criteria are prescribed for teaching materials to provide these advantages. Some of these criteria are as follows; appealing to different sensory organs (Duman, 2013), drawing students' attention (Fiş-Erümit, 2013), compliance with the program and the gains (Howard & Major, 2004), and compliance with students' cognitive levels.

In addition to these, it is stated that especially digital materials should be used in compliance with the teaching outcomes, syllabus and visuality criteria (Fiş-Erümit, 2013). One of the findings is that digital material makes the teaching process more effective when used in accordance with these criteria. It is also seen in the studies abroad that digital comics contribute to education (Aryanto, 2007), increase students' academic success (Layla, 2020), are found entertaining by students (Aryanto, 2007), increase the desire to learn (Yunus, Salehi, Syed & Balaraman, 2011), increase students' interest (Crăciun & Bunoiu, 2019). In this regard, it is seen that the participants find digital comic material positive and their academic achievements are positively affected by it is consistent with the literature.

Participants pointed out that the lesson taught with comic book material increases motivation in learning, keeps the attention alive and contributes to creative thinking skills. The comic book draws attention with its illustrated structure, it has also become an advantageous material for participants who have reading difficulties with its short and concise sentences. The comic does not provide only didactic information. Accordingly, the comic book allows one to discover information through satire, hyperbolism or antithesis. This situation also affects high level thinking skills.

Along with the instructional and motivational advantages of social studies education with digital comics, students stated that they learned a reading material that they had never used before. When considered that each type of book is a separate world, a brand-new window has been opened for students. It is believed that this situation may also have a positive effect on their reading skills. The students stated that they wanted the comics to be used in other courses as a teaching material as well. These expressions indicate that students do not only see comics as a material that can be used in social studies courses, but also want to transfer this material to other courses. In the study of İlhan (2016), there are similar findings; students especially want the comics to be used in courses where they have learning difficulties or do not find fun.

The most interesting finding of the study might be that the students' families also watched and liked the lesson. A few of the participants stated that their parents also attended the class with them and they liked it very much. Family support in the education process positively affects success (Çelenk, 2003) and student motivation (Vatansever-Bayraktar, 2015). Parents who also support the use of comics as educational materials tend to increase their children's success and motivation.

Note

This study was presented as an oral presentation in International Conference on Studies in Education and Social Sciences (ICSES)-2020, Istanbul, Turkey: www.icses.net

References

Ak, M. M., Erdoğan, M. F. & İlhan, G. O. (2020). Digital Design as a visual instructional material: Visited, Discovered, Taught. *Journal of History School, 47*, 2458-2484.

Akın, S. (2019). *Hayal Kahramanları*. İstanbul: Türkiye İş Bankası Kültür Yayınları

Aküzüm, C. (2017). Eğitim ve Teknoloji ile İlgili Temel Kavramlar. In Sever, R., Koçoglu, Erol (Eds.), *Sosyal Bilgiler Öğretiminde Eğitim Teknolojileri ve Materyal Tasarımı.* Ankara: Pegem Akademi.

Akyüz, Y. (2012). *Türk Eğitim Tarihi*. Ankara: Pegem Akademi.

Alkan, C. (1990). Öğrenme-öğretme durumunun temel bir öğesi olarak öğretim araçları üzerine bir öğretim ünitesi. *Ankara University Journal of Faculty of Educational Sciences (JFES), 23*(2), 507-521.

Alkan, C. (1996). Uzaktan eğitimin tarihsel gelişimi. Türkiye 1. Uluslararası Uzaktan Eğitim Sempozyumu. Ankara, 12-15 Kasım

Alkan, C. (1998). Uzaktan Eğitimde Gelişim. Kocaeli Uzaktan Eğitim Semineri (4-6 Ekim 1997). Ed. Baytekin,

Ç.. İzmit: Kocaeli Üniversitesi Basımevi

Alpin, H. (2002). *1001 Soruda Çizgi roman*. İstanbul: İm yayınları.

Aryanto, V. D. W. (2007). Using digital comics to enhance elearning on anti-corruption education. Spec. Issue Int. J. Comput. Internet Manage, 15(SP3), 26.1-26.4.

Bakıoglu, B. & Çevik,M. 2020. Science Teachers' Views on Distance Education in the COVID-19 Pandemic Processes. *Turkish Studies*, 15(4), 109-129.

Baloğlu-Uğurlu, N. B., & Üzen, A. T. (2017). Social Studies Teachers' Opinions About Digital Timelines. *The Journal of Buca Faculty of Education*, Issue (44), 225-236.

Baltacı,A. 2019. The Qualitative Research Process: How to Conduct a Qualitative Research?. Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,5(2), 368-388.

Barr, R. D., Barth, J. L., & Shermis, S. S. (1977). *Defining the social studies* (No. 51). Arlington, VA: National Council for the Social Studies.

Bozkurt, A. (2020). Koronavirüs (COVID-19) pandemi süreci ve pandemi sonrası dünyada eğitime yönelik değerlendirmeler: Yeni normal ve yeni eğitim paradigması. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi, 6*(3), 112-142.

Bozkurt,S. 2017. *The importance and effects of cinematographic design in distance education broadcasting: Bülent Ecevit Universiyt Distance Education Application and Research Center Example.* Published Master Thesis. Okan University, İstanbul.

Brown, C. (2007). Learning through multimedia construction-A complex strategy. *Journal of Educational Multimedia and Hypermedia, 16*(2), 93-124.

Bulut, R. & Aktürk, V. 2013. The Effects of the Use of Animations and Digital Maps in Social Studies on Students' Spatial Perception Skills. *Marmara Cografya Dergisi.* 28,1-17.

Büyük, K., Uğur, S., Saykılı, A., & Şahin, V. (2018). Açık ve uzaktan öğrenmede oyunlaştırma unsurları içeren oyun kullanımı: Soruküp uygulaması örneği. *Açıköğretim Uygulamaları ve Araştırmaları Dergisi*, *4*(2), 211-234.

Cantek, L. (2019). *Türkiye'de Çizgi Roman*. İstanbul: İletişim Yayınları.

Celenk, S. (2003). The Prerequisite for School Success: Home-School Cooperation *Elementary Education Online*, 2(2),28-34.

Cengelci, T. 2007. The Effect of Brain- Based Learning to Success and Retention in Social Studies. Elementary Education Online, 6(1), 62-75.

Cetin,Y. (2010). *Graphic Novels Milli Folklor*, 85, 193-198.

Crăciun, D., & Bunoiu, M. (2019). Digital Comics, a Visual Method for Reinvigorating Romanian Science Education. *Romanian Journal for Multidimensional Education/Revista Romaneasca Pentru Educatie Multidimensionala*, *11*(4), 321-341.

Creswell, J. (2012). Educational research: planning, conducting, and evaluating quantitave and qualitative research. Boston: Pearson Education, Inc.

Çelikkaya, T. (2017). Sosyal bilgiler Öğretiminde Araç-Gereç ve Materyal Kullanımının Önemi. In *Sosyal Bilgiler Öğretiminde Eğitim Teknolojileri ve Materyal Tasarımı*. Sever, R. ve Koçoğlu, E. (Ed). Ankara: Pegem Akademi.

Demiralp, N. (2007). Materials ın Geography Education and the Geography Currıculum. *Kastamonu Education*

Journal 15(1), 373-384.

Demiray, E. (2013). Distance Learning and its Importance in Education of Woman. *Journal of Research in Education and Teaching*. 2(2), 155-168.

Demircioglu, I. H. (2008). Using historical stories to teach tolerance: The experiences of Turkish eighth- grade students. *The Social Studies*, 99(3), 105-110.

Dewey, J. (1938). *Experience and Education*. New York: Macmillan Company.

Distance Education: Criteria, Implementation and Evaluation. *Journal of Instructional Technologies & Teacher Education*, *2*(1), 86-111.

Dogan, E., & Koc, H. (2017). The Impact of Instruction Through Digital Games on Students Academic Achievement in Teaching Earthquakes in a Social Science Class. *İnternational Journal of Turkısh Education Science*. *5* (8), 90-100.

Doganay, A. (2008). Çağdaş sosyal bilgiler anlayışı ışığında yeni sosyal bilgiler programının değerlendirilmesi. *Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, *17*(2), 77-96.

Duman, G. B. (2013). Material Development and Effective Use of Materials in Teaching Turkish as a Foreign Languege. *Journal of Mother Tongue Education ADED -JOMTE. 1*(2), 1-8.

Ebuara, V. O. (2012). Information communication technology (ıct) as a factor in knowledge creation in cross river Nigeria. *Journal of Educational Review, 5*(1), 43-49.

El Refaie, E. Hörschelmann, K. (2010). Young people'sreadings of a political cartoon and the concept of multimodalliteracy. *Discourse: Studies in the CulturalPolitics of Education, 31*(2). 195-207.

Erguney, M. (2015).The Future of Distance Education: MOOC (Massive Open Online Course). *Journal of Research in Education and Teaching, 4*(4), 15-22.

Fis-Erumit, S. (2013). Instructional Material Design for Biology course in Web-Based

Gelisli, Y. (2015). Practices of Distance Education for Techer Training: History and Development. *Journal of Research in Education and Teaching, 4*(3), 313-321.

Gokce, T.A. (2008). Küreselleşme sürecinde uzaktan eğitim. *Dicle Üniversitesi Ziya Gökalp Eğitim Fakültesi Dergisi,* **(**11), 1-12.

Görgen, İ. (2014). Program Geliştirmede Temel Kavramlar. In *Eğitimde Program Geliştirme Kavramlar ve Yaklaşımlar.* Şeker, H. (Ed). Ankara: Anı Yayıncılık.

Gunduz, M. (2012). *Mustafa Satı Bey ve Eğitim Bilimi*. Ankara: Otorite Yayınları.

Howard, J., & Major, J. (2004). Guidelines for designing effective English language teaching materials. *The Tesolanz Journal*, *12*(10), 50-58.

Ilhan, G. O. (2016). *Use of comics in social studies teaching.* Unpublished doctoral thesis. Afyon Kocatepe University, Afyonkarahisar.

Ilhan, G. O., & Oruc, S. (2019). Comic Books Use in Social Studies Lesson: Texas History. *Education and Science*, *44*(198).

Isman, A. (2005). *Uzaktan Eğitim*. Ankara: Pegem A Yayıncılık.

Kablan, Z., Topan, B., & Erkan, B. (2013). The Effectiveness Level of Material Use in Classroom Instruction: A Meta-analysis Study. *Educational Sciences: Theory & Practice* , *13*(3), 1629-1644.

Kara, C., Topkaya, Y., & Simsek, U. (2012). The Place of Active Citizenship Education in the Social Studies Curriculum . *Zeitschrift für die Welt der Türken/Journal of World of Turks, 4*(3), 147-159.

Keskın, A. & Ilhan, G.O. (2020). Sosyal bilgiler dersi değerler eğitimine yönelik dijital çizgi roman materyal tasarımı: "Gizli labirent". In *ERPA International Congresses on Education*.

Keskin, M. & Ozer Kaya, D. (2020). Evaluation of Students' Feedbacks on Web-Based Distance Education in the COVID-19 Process. *İzmir Kâtip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, 5*(2), 59-67.

Kırık, M.A. (2014). Historical development of distance education and the situation in Turkey. *Marmara University Journal of Communication*, 21, 73-94.

Kimmel, H. S., Carpinelli, J. D., Spak, G. T. & Rockland, R. H. (2020). Methodology for Retaining Student Learning During the Pandemic. In Sahin, I., Shelley, M. (Eds), *Educational Practices during the COVID-19 Viral Outbreak: International Perspectives* (1-18). Monument: ISTES Organization.

Koc, G. (2006). Teacher-Learner Roles and Interaction Systems in Constructivist Classıooms. *Education and Science, 32*(142), 56-64.

Kosterelioglu, İ., Bayar, A., & Akın Kosterelioglu, M. (2014). Activity-Based Learning Process on Teacher Education: A Case Study. *Electronic Turkish Studies*, *9*(2), 1035-1047.

Kurt, S. (2019). *Examining the opinions of social studies teacher candidates on the use of comics in teaching social studies.* Published master thesis , İstanbul University, İstanbul.

Layla, N. F. (2020). The effectıveness of dıgıtal comıcs (dc) ın the teachıng of wrıtıng recount texts. *Language-Edu*, *9*(1), 1-10.

Marianthi, V., Boloudakis, M. &Retalis, S. (2007) From DigitisedComics To Digital HypermediaComics: TheirUse In Education. International Council of Educational Media Annual Conference 2007, 21-22 September 2007, Nicosia, Cyprus.

Mart, M. & Kesicioglu, O.S. (2020). Parents' Opinion to Play at Home During COVID-19 Pandemic. *Turkish Studies, 15*(4), 945-958.

McCloud, S. (2001). *Understanding Comics: Invısıble Art*. New York: Amazing Heroes.

McLaughlin, M. (2013). Rise of the Eco-Comics: The State, Environmental Education and Canadian Comic Books, 1971-1975. *Material Culture Review, 77*, 9-20.

Meydan, A. (2018). Öğretim teknlojileri ve materyal tasarımı. In Uzunöz, A. & Aktepe, V. (Ed.), *Özel Öğretim Yöntemleri* (327-365). Ankara: Pegem Yayıncılık

Milli Eğitim Bakanlığı. (2018). *Sosyal bilgiler dersi öğretim programı*. Retrieved from http://mufredat.meb.gov.tr/Dosyalar/201812103847686SOSYAL%20B%C4%B0LG%C4%B0LER%20 %C3%96%C4%9ERET%C4%B0M%20PROGRAMI%20.pdf

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers college record*, *108*(6), 1017-1054.

Missiou, M., & Stefos, E. (2012). Environmental Education through Comics and Internet Applications. A Case Study in High School. *Journal of Environmental Protection and Ecology*, *13*(3A), 2013-2019.

Mutlu, Z. (2019). *The opinions of the social studies teacher candidates on using comics during the process of teaching social studies.* Published master thesis, Muğla Sıtkı Koçman University , Mugla.

Ozdemir, A. A., & Ramazan, O. (2012). Child, Mother and Teacher Attitudes towards Toys. *Journal of Educational Sciences Research*, *2*(1), 1-16.

Ozyurek, A., & Cavus, Z. S. (2016). Examination of the Status of Primary School Teachers Whether or Not they use Game-Based Teaching Techniques. *Kastamonu Education Journal*, *24*(5), 2157-2166.

Öztürk, C. (2015). *Sosyal Bilgiler Öğretimi*. Ankara Pegem: Akademi

Peker, E. A., & Tas, E. (2017). Nesnel ve dijital "Uygula Öğren Periyodik Cetvel" materyalinin öğrenci başarısına etkisinin araştırılması. *Fen Bilimleri Öğretimi Dergisi, 5*(1), 20-42.

Sarı, T., & Nayır, F. (2020). Education in the Pandemic Period: Challenges and Opportunities. *Turkish Studies, 15*(4), 959-975.

Senturk, M. (2020). The effects of educational comics and educational cartoons in the social studies course on student' attitude, motivation and academic achievement. Published doctoral thesis, Ataturk University, Erzurum.

Senturk, O.Ç. (2020). *The effect of argumentation-supported educational comics on students' environmental interests, motivation, and academic achievements and student experiences*. Published doctoral thesis, Gazi University, Ankara.

Sones, W. W. (1944). The comics and instructional method. *The Journal of Educational Sociology*, 18(4), 232-240.

Soydan, C. (2018). *İnvestigation of digital material development processes of field teachers in guidance of information technologies teacher*. Published master thesis, Ondokuz Mayıs Unıversity, Samsun.

Sozer, E. (1998). Sosyal bilgiler öğretiminde kullanılan araç gereçler. In Can, G (Ed.), *Sosyal Bilgiler Öğretimi*. Eskişehir: Anadolu Üniversitesi Yayınları.

T.C. Milli Eğitim Bakanlıgı. (2020). Retrieved from http://www.aol.meb.gov.tr

Tatalovic, M. (2009). Science comics as tools for science education and communication: a brief, exploratory study. *Journal of Science Communication*, *8*(4), 1-17.

Temel, A. & Ilhan, G. O. (2019). Sosyal bilgiler öğretmenlerinin insan hakları konusunda MalcolmX çizgi romanının kullanımı hakkında görüşleri. In *VI. Yıldız Sosyal Bilimler Kongresi*.

Topkaya, Y. (2014). *Impact of usage of comics on cognitive and emotional learning in citizenship and democracy education classes*. Unpublished doctoral thesis. Atatürk University, Erzurum.

Topkaya, Y., & Doğan, Y. (2020). The Effect Of Educational Comics On Teaching Environmental ıssues and Environmental Organizations Topics in 7th Grade Social Studies Course: A Mixed Research. *Education and Science, 45*(201), 167-188.

Topkaya, Y., & Simsek, U. (2015). Impact of instructional comics on the attitudes towards citizenship and democracy education. *Journal of Computer and Education Research*, 3(6), 152-167.

Ulug, F. & Kaya, Z. (1997). *Uzaktan eğitim yaklaşımıyla ilköğretim*. Ankara: Uzaktan Eğitim Vakfı.

Unal, O. ve Demirkaya, H. (2019). A Semt-Expertmental Study on the use of Educational Cımics in Social Studies *International Journal of Geography and Geography Education (IGGE)*, (40), 92-108.

Vatansever-Bayraktar, H. (2015). Student Motivation in Classroom Management and Factors that Affect Motıvation. *Turkish Studies, 10*(3), 1079-1100.

Yaglı, A. (2016). The Importance of Hıstorical Comics in Inheriting the Awerness od Hıstory to the Youth: Comics whit the Title the Enver Pasha Legand, By Suat Yalaz. *Electronic Turkish Studies*, *11*(10), 693-706.

Yaglı, A. (2017). *Modern Bir Anlatı Sanatı Olarak Çizgi Roman*. İstanbul: Kriter Yayınevi

Yalcınkaya, S. (2006). *Web based dıstance learning system and dıstance learning familiarities among members of the Cukurova Unıversity*. Published master thesis. Çukurova University, Adana.

Yaşar, Ş. & Gültekin, M. (2009). Sosyal bilgiler öğretiminde araç- gereç kullanımı. In Öztürk, C. (Ed.), *Sosyal Bilgiler Öğretimi.*. Ankara: Pegem Akademi.

Yucesoy-Ozkan, S., Kaya, F., Gulboy E., Altun D. E. & Oncul, N. (2020). General and Special Education Practices During the COVID-19 Viral Outbreak in Turkey. In Sahin, I., Shelley, M. (Eds), *Educational Practices during the COVID-19 Viral Outbreak: International Perspectives* (19-62). Monument: ISTES Organization.

Yunus, M. M., Salehi, H., Tarmizi, A., Syed, S., & Balaraman, S. (2011). Using digital comics in teaching ESL writing. *Recent researches in chemistry, biology, environment and culture*, 53-58.

Author Information

Genç Osman İlhan
https://orcid.org/0000-0003-4091-4758
Yildiz Teknik University
Turkey
Contact e-mail: *gosman.ilhan@gmail.com*

Gamze Kaba
https://orcid.org/0000-0002-0385-6600
Yildiz Teknik University
Turkey

Maide Şin
https://orcid.org/0000-0003-0855-4473
Yildiz Teknik University
Turkey