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"Plickers", The Fun State of Assessment and Evaluation: The Experiences of Social Studies Pre-Service Teachers

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Abstract

In COVID-19 pandemic process, teachers paid effort to use Web 2.0 tools to make their classes interactive and more interesting in distance education. Central institutions have also planned and implemented various in-service trainings to support usage of technology by teachers. In the 2021-2022 academic year, distance education was terminated and face-to-face education was readopted. It can be argued that it is not acceptable to return to learning-teaching process in the classrooms without technology after two years of technology-based progress experienced with all the stakeholders of education. For this reason, it is important to make effective use of various web 2.0 tools in face-to-face education in order for students to experience and internalize technology as a teaching tool. In this context, the aim of this study is to reveal the opinions of social studies pre-service teachers as regards the Plickers application that they experienced with secondary school students. Document analysis was used in the study. In this context, the reflective texts were used as a data source where 24 pre- service teachers shared their application experiences in the portfolios they prepared in the Information Technologies in Social Studies course. The obtained data were analyzed by document analysis consisting of review, detailed examination and interpretation steps. As a result of the study, it was determined that the preparation and application processes of Plickers were experienced as "easy" and that its advantages outnumber disadvantages.

Keywords: Social studies, plickers, web 2.0, assessment and evaluation, pre-service teachers.

Introduction

The way technology affects several aspects of society is concretely observable; however, its effects on educational institutions are much less visible (Keengwe, 2018: xi). Scientific studies on the use of technology in education from past to present have revealed that using these technologies in the learning-teaching process will provide significant gains for students. However, although the use of technology in education is always desirable, it is out of question in a significant part of the world due to the lack of necessary infrastructure. In the rest of the world, it has always been left to the choice and understanding of teachers. However, due to the COVID-19 pandemic in 2020, the use of technology in education has become a necessity rather than a choice. While the countries with a high level of welfare and developed technological infrastructure got through this process between 2020 and 2022 more smoothly, the inequality of opportunity in education in other countries deepened even more in this process. As a matter of fact, according to UNICEF's (2021) New Remote Learning Readiness Index findings, it has been revealed that, with a few exceptions, countries with high gross national income are better prepared for a possible new distance education process compared to low-income countries. However, the pandemic process faced in the last quarter of 2019 caught many countries off guard. According to UNICEF's (2020) report, by 2020, for at least 463 million of the world's school-age children who constitute approximately 30%, distance education through internet, radio and television broadcasts is not accessible. In 2022, as we enter the third year of the pandemic, schools are not yet fully opened in 23 countries that are home to 405 million school-age children (UNICEF, 2022).

In countries that can implement distance education, teachers have tried to focus on practices that will make students active in the classes. Chen, Harris, and Shang (2009) mentioned the importance of utilizing web 2.0 technologies to cope with the challenges of providing active learning to students in virtual learning environments. Contrary to popular belief, web 2.0 is much more than a set of 'cool' new technologies and services (Anderson, 2007). Web 2.0 is all about using collective intelligence (O'Reilly, 2007). Web refers to the second generation of the Web, where content is created with users and includes

workable, user-centered web applications and services (Wilson et al., 2011). Stating that the emergence of Web 2.0 technologies adds new dimensions to the potential of technologies that facilitate learning, Sachs (2014: 419) argued that technology would be an integral part of learning in the 21st century and web 2.0 would help facilitate this process.

The most prominent feature of Web 2.0 technologies is to strengthen the communication between users and to facilitate their socialization (Chen, Harris & Shang, 2009). However, the most distinctive characteristic of Web 2.0 technologies is that they are based on interaction. In Ketelhut's study (2019: 24), participatory interactive technology was described as "a great way to use visual and auditory learning styles to reach students with different learning abilities". Web 2.0 tools have several different categories such as animation, digital story, classroom management, and social networking. Yet, another category that will be discussed in this study is measurement and evaluation. Only through measurement and evaluation it is possible to know whether learning is realized in education Chng & Gurvitch, 2018). In this context, types of evaluation can be specified as diagnostic, formative and assessment-oriented. It can be argued that measurement and evaluation processes in educational institutions are mostly carried out with traditional methods, and that web 2.0 tools are used rarely at every stage of the learning-teaching process, especially at the measurement and evaluation phase. Şenyurt and Şahin (2022) found in their study that the knowledge of teachers regarding web 2.0 tools is limited and that they rarely use these tools. The reason for the limited knowledge of teachers and their rare usage of application is that they do not encounter courses related to these contents before their career begins. Aldır (2014) found in his study conducted on this subject that pre-service teachers did not take the courses related to these contents at a sufficient level during the undergraduate period. In the literature there are studies conducted with secondary school students (Arzfi et al., 2022; Cin Şeker, 2020; Korkmaz et al., 2019; Tuncer & Şimşek, 2019; Yaylak, 2017) and university students (Masita & Fitri, 2020; Mshayisa, 2020; Wood, Brown & Grayson, 2017; Zengin, Bars & Şimşek, 2017) as regards Plickers application.

Several studies have been performed to determine the opinions and attitudes as regards Plickers application. However, this study is different in that it includes the following process: social studies pre-service teachers first learned Plickers as a student in the relevant course and then experienced it in their courses and midterms. Secondly, they used the application as an intern teacher (within the scope of Teaching Practice I course) with secondary school students. Therefore, the study includes the views of pre- service teachers as regards the application as well as their observations on the impact of the application on secondary school students.

In this context, the aim of the study is to reveal the experiences of pre-service teachers on the Plickers application that they carried out with secondary school students within the scope of Information Technologies in Social Studies course opened in the Social Studies Teaching program of a state university. In this context, answers to the following questions were sought in the study:

What are the opinions of the pre-service teachers as regards the preparation process of the Plickers application?

What are the opinions of pre-service teachers as regards the implementation process of the Plickers application?

What are the observations of pre-service teachers as regards the implementation process of the Plickers application?

What are the opinions of pre-service teachers as regards the advantages

that Plickers application can provide to students?

What are the difficulties faced by pre-service teachers during the implementation process?

Method

Research Model

In this study, which aims to display the experiences of social studies pre-service teachers related to Plickers web 2.0 application, document analysis, a qualitative research method, was used. Document analysis includes the examination of written sources which consist of information on the topic to be studied (Yıldırım and Şimşek, 2018). Student activities during classes, a personal letter, school records, a work of art, newspapers and other documents can be very valuable and explanatory for qualitative studies (Yin, 2011). Bogdan and Biklen (2022) also stated that the texts written for class assignments are potentially rich data sources which are frequently used by researchers. However, the use of documents as a data source does not mean that they are less valuable than observations and interviews (Merriam, 2015). In this context, document analysis was preferred in the study in order to be able to benefit from the reflective texts in the portfolios prepared by the pre-service teachers in the 2021-2022 and 2022-2023 academic years in which they conveyed their experiences about the phenomenon discussed. On the other hand, the in-class application and reflective text creation tasks related to the relevant application were not given in the first place with the prospect that they would be used for research. Actually, the same tasks were given to the pre- service teachers by the researcher/trainer for applications such as Voki, Powtoon and Quiver Vision 3D Augmented Reality. In this context, it can be argued that the model of the study coincides with the document review.

Study Group

The study group of the research consisted of reflective texts in the portfolios prepared by 24 senior students within the relevant course at Social Studies Teaching Program of a public university in 2021-2022 and 2022-2023 academic years. However, since the findings of the research were planned to be supported by direct quotations from these reflective texts, the portfolio notes that can provide information about the gender of the writers of the texts and their inclination to technology is shown in Table 1. Details on the course information from which the portfolios were obtained are given under the title Data Collection Tools and Process.

Table 1. *Information about the participants*

Nickname	Gender	Portfolio Score	Academic Year	n	%
Aybike		100	2021-2022		
Ayça		95	2021-2022		
Aylin		85	2021-2022		
Begüm		87	2021-2022		
Esin		95	2021-2022		
Gamze		75	2021-2022		
Ömür		95	2021-2022		
Seda		100	2021-2022		
Selin	Female	95	2021-2022	17	71
Sanem		100	2021-2022		
Sude		88	2021-2022		
Sonay		100	2021-2022		
Ayten		100	2022-2023		
Farah		100	2022-2023		
Gizem		100	2022-2023		
Lale		100	2022-2023		
Sema		98	2022-2023		
Fazıl		100	2021-2022		
Hayri		100	2021-2022		
Mete		90	2021-2022		
Aras	Male	92	2021-2022	7	29
Tuğrul		65	2021-2022		
Abdullah		63	2022-2023		
Ercan		93	2022-2023		
Total				24	100

As indicated in Table 1, there are a total of 24 pre-service teachers, 17 female and 7 male, whose opinions are given on portfolios in the study. 17 of the teacher candidates prepared their portfolios in the fall semester of the 2021-2022 academic year, and 7 of them in the 2022-2023 academic year.

Data Collection Tools and Process

The data source used in the study is the portfolios prepared for the SBÖ011 Information Technologies in Social Studies course opened by the researcher in the Fall semesters of the 2021-2022 and 2022-2023 academic years in the Social Studies Teaching program of the Faculty of Education of a public university. Information Technologies in Social Studies course is included in the Social Studies Teaching Undergraduate Program as an elective course which includes the use of technology and technology-based activities in social studies teaching and applications to increase the technological competencies of pre-service teachers (YÖK, 2019). In other words, the purpose of this course is to transfer technological pedagogical content knowledge and competencies that social studies pre-service teachers need in the 21st century, to develop their skills for web 2.0 applications that they can use in face-to-face and distance education, and to enable them to adapt what they have learned to social studies teaching. In the first two weeks of the course, basic concepts related to technology, software types, Fatih Project, EBA platform and theoretical information about the existence and importance of technology in the Social Studies Curriculum were discussed. In the

following weeks, interactive board (Padlet, Mentimeter), augmented reality (Quiver Vision, Space 4D+, Dinosaur 4D+), digital storytelling (Powtoon, Storyjumper), measurement and evaluation (Plickers, Quizizz, Kahoot, Puzzle Maker), digital cartoon and animation (Pixton, Vyond, Animaker, Voki), classroom management (ClassDojo, Edmodo), mind map (Mindomo, Wisemapping) and, finally, presentation preparation applications (Voicethread, PowerPoint, Prezi) were covered. The objective of these courses was to perform step-by-step applications with students and to teach pre-service teachers how to use web 2.0 applications in their social studies classes. Within this perspective, they were asked to add the materials they prepared for each application in their portfolios (in pdf format).

In the sixth week of the course, Plickers application was introduced to the pre- service teachers and an implementation consisting of 20 questions was performed. Then, step-by-step development and application process was realized with pre-service teachers in computer environment. In the seventh week of the course, which was the midterm week, the pre-service teachers took an exam consisting of 25 multiple choice questions using Plickers. Thus, it was ensured that pre-service teachers would experience Plickers both in the classroom and in the real exam environment. In addition, the experiences used in the research were obtained from the application assignments. Since the pre-service teachers were positioned at specified schools for internship within the scope of Teaching Practice I course, they were asked to prepare a total of 15 questions in 3 sets consisting of 5 questions each at the end of the existing learning areas/units in the schools and apply them to the students with Plickers. Pre-service teachers were requested to place in their portfolios classroom images showing that they carried out the application, the questions they prepared in the Plickers application, and their evaluation results. In addition, they were expected to reflect on a structured form their experiences, observations, emotions and opinions as regards the pre-implementation and implementation processes, as well as the advantages and disadvantages of the application, based on their personal experiences. Pre-service teachers prepared these forms in Word program, added them to their portfolios, and handed them at the end of the semester. In this context, 30 pre-service teachers who took the course in the 2021-2022 academic year and 20 pre-service teachers who took the course in the 2022-2023 academic year carried out this practice in the schools they were positioned for internship. Thus, teachers and students of at least 20 classrooms (approximately 700 students) were able to experience this practice. In the study, the texts of 24 pre-service teachers who fully prepared the reflection task within the framework of the above-mentioned titles were used. 26 pre-service teachers who performed the application incompletely or did not perform it at all were not included in the study. The information about the grade level at which the pre-service teachers performed the Plickers application and the learning areas of the social studies course are given in Table 2.

Photo 1. Images from Plickers apps

Table 2. *Grade level and learning domain where the application was carried out*

Grade Level	n	%
5th grade	9	37
6th grade	8	33
7th grade	6	25
8th grade	1	4
Total	17	99/100
Learning Domain	f	%
Culture and Heritage	17	63
People, Places and Environments	8	29
Science, Technology and Society	1	4
A National Epic: Either Independence or Death!	1	4
Total	27	100

As indicated in Table 2, 9 of the pre-service teachers implemented the application at 5th grade social studies course, 8 pre-service teachers implemented the application at 6th grade social studies course, 6 pre-service teachers implemented the application at 7th grade social studies course, and 1 pre-service teacher implemented the application at 8th grade Turkish Republic Revolution History and Kemalism course. Considering that some participants performed the implementation in multiple learning fields, Culture and Heritage became the most preferred learning field with 63% in terms of Plickers application. The most important reason for obtaining this result is that Culture and Heritage is the second learning area of the Social Studies Course Curriculum, and the application and reflection tasks are given in the weeks covering this learning area. As a result of the evaluation of the porfolios, it was concluded that the Plickers experience of the pre-service teachers is significant for other teachers and those doing research in the related field. Therefore, it was decided to include these files in the scope of the study and to use them as data sources.

Analysis of the Data

Document analysis, one of the data analysis methods, was used in the research. Bowen (2009: 27) defined document analysis as “a systematic procedure for reviewing and evaluating both printed and electronic materials”. In the analysis of the data, Corbin and Strauss’s (2008) three-stage document analysis process including review, detailed examination and interpretation was used. The documents were reviewed and coded, then analyzed in detail and subjected to content analysis by reaching the themes. The findings obtained from the analyzes were interpreted by turning them into tables and integrating direct quotations.

Ethical Permits of Research

In this study, all the rules specified to be followed within the scope of "Higher Education Institutions Scientific Research and Publication Ethics Directive" were complied with. None of the actions specified under the heading "Actions Contrary to Scientific Research and Publication Ethics", which is the second part of the directive, have been taken.

Ethics Committee Permission Information:

Since only document review was used in this study, it is not subject to ethics committee approval.

Findings

Findings of the study are given in tables and supported by direct quotations, as seen below. Like every application, Plickers requires some preliminary action such as writing questions on the application, forming classrooms, assigning students, printing out the QR codes, and organizing them according to the class list. As the pre-service teachers benefited from the free-of-charge basic features of the application, they had to prepare the required 15 questions in three folders. Considering the foregoing, the views of the pre-service teachers regarding the difficulty level of the preparation phase of the Plickers application are shown in Table 3.

Table 3. *Opinions of the participants on the pre-application preparation phase of Plickers*

Preparation Process	n	%
Easy	20	84
Difficult	2	8
Partly difficult	2	8
Total	24	100

As seen in Table 3, 84% of pre-service teachers evaluated the preparatory phase of Plickers as "easy". Expressing that she progressed more easily as she spent time in the application, Aylin explained this situation as follows: "I had a hard time preparing the application at first. As I spent time in the application, I learned better." Begüm similarly stated that she had difficulties during the preparation process: "Even though the preparation of the application was difficult and demanding, the application process was very easy." Selin stated that the preparation process was easy: "The preparation phase was not difficult, it was prepared easily." Sude also emphasized the simplicity of the preparation process as follows: "There was no difficulty in preparing the questions in the Plickers application." Ercan, on the other hand, drew attention to the partial difficulty of the preparation process of the application: "The preparation process takes some time. It is more difficult than other applications. It is necessary to take the names and surnames of the students one by one from the class list and upload them to the application. It's a bit of a hassle in that regard."

The application process can be generally summarized as follows: opening the Plickers application on the smart board, distribution of QR codes to the identified students, informing students about how the application will take place, starting the test, after making sure that all students have read the questions, scanning through the phone the QR codes on which the answers are reflected, after making sure that answers of all students are scanned, ending the scanning process on the phone and showing the correct answers to the students. Then, after each question is answered, the test is finished. The opinions of the pre-service teachers regarding the difficulty level of the implementation process are given in Table 4.

Table 4. *Opinions of the participants on the implementation process of Plickers*

Implementation Process: Difficulty Level	n	%
Easy	15	62
Difficult	4	17
Difficult at first, easy later	5	21
Total	17	100

According to Table 4, 62% of pre-service teachers think that the application process of Plickers is easy, 21% think that the application is difficult at first but gets easier as it is used, and 17% describe

this process as difficult. Thinking that the application process was easy, Aylin explained it as follows: "It was easy to implement in the classroom. Since the class is crowded, not many activities can be done normally, but thanks to the Plickers application, activities were easily held in crowded classes. The students liked the activity very much and they wanted to apply it to other subjects as well. I think that I will use this application frequently both in my education life and after I become a teacher." Sanem, on the other hand, stated that although it was difficult at first, it became easier as she used it: "For me, the application process is fun. I learned a different application; it will be an application that I can use in my teaching life. At first we were a bit of a callow when applying it to the 5/C class. It was a lengthy application. Later, we were able to make an easier and more comfortable application when using it with the 5/D class." Similarly, Ömür explained that he had difficulties in using the application in the first place: "We had difficulties in using the application in the classroom at first. Unlike us, the students immediately understood and adapted to the situation. We discussed the questions clearly and had the opportunity to see evidently why they did wrong. It's been a nice experience for me. And the students loved it, too."

Expressing that the implementation process was difficult, Esin described the process she went through as follows: "For me, the implementation process was difficult. It was hard to explain and show the application to the students. It was difficult to manage the class, to prevent the students from talking among themselves. Although I explained to the students the nature of the application, I lost time because they did not keep the QR code properly while reading." Seda stated that she had similar difficulties: "At the beginning of the application process, it was not easy to activate the Google account via the smart board. During the application, as a result of difficulties in reading QR codes of some student and the students interacting with each other too much, there were problems in directing them to the next question." The findings regarding the classroom observations of the pre-service teachers who experienced the implementation process are shown in Table 5.

Table 5. *Classroom observations of the participants on Plickers' implementation process*

Implementation Process: Observations	f	%
Towards Emotional Impact		
Fun	22	44
Excited	6	12
Pleased	4	8
Be amazed by the app	1	2
Behavior Oriented		
Students' willingness to repeat	9	18
Application Oriented		
Students adapt quickly to the application	6	12
Environment Oriented		
Creating a competitive environment	2	4
Total	50	100

When Table 5 is examined, it can be seen that all pre-service teachers evaluated the application process on Plickers as entertaining despite the various difficulty levels mentioned in Table 4. In addition, some of the pre-service teachers received a request from the students to prepare another Plickers practice after the application, and some teachers pointed out that the students could adapt to the application quickly. Quotations from the reflection assignments of the pre-service teachers about the fun and enjoyable aspects of the process are given below.

Ayça stated that an entertaining environment was created: "Plickers application not only created competition among students; it also increased their interest and motivation. It was clear that

the students enjoyed a lot." Similarly, Aylin stated that the students wanted to perform the application in other courses as well: "they had a fun time… The students really loved the activity they wanted to do it on other subjects as well. I think that I will use this application frequently both in my education life and after I become a teacher." Begüm also stated that the students wanted to use the application again and were excited when they first saw it: "Students liked it very much. … The students were very excited at first. They asked whether they would do it again." Fazıl said: "It was very fun and nice. We had a fun time with the students." Gamze expressed the impact of the application on the students as follows: "… the interest of the students was enormous. Especially the Plickers application attracted the attention of the students. They wanted me to run it all the time." Ayten conveyed her observations as follows: "When I used this application in the classroom, I saw the thrill and happiness in the eyes of the students closely. The whole class was having fun and learning at the same time in a competitive environment." Hayri explained his observations as follows: "Students' interest in the program was extremely high. They were already experienced because they had done it before. They were asking my colleagues for another Plickers activity. I answered those requests. In general, the interest of the students skyrocketed thanks to the use of such activities in the classroom environment." Sonay, on the other hand, described the students' willingness towards the application as follows: "The application process was quite enjoyable. I was very happy, especially as the students were pleased when they answered the questions correctly. Also, students were delighted when their names appeared on the board. They preferred solving questions instead of going to recess. The students said that they wanted to solve more questions even though we had run out of them."

Regarding the Plickers application, another issue that pre-service teachers are asked to include in their reflection assignments is to indicate the advantages and disadvantages of the application. The relevant findings are given in Tables 6 and 7.

Table 6. *Opinions of the participants on the advantages of the Plickers application*

Advantages of Plickers App	f	%
Students Oriented		
See students' assessment results instantly	16	16
Increasing students' interest and motivation towards the lesson	13	13
Attracting attention and motivation towards the lesson	12	12
Ensuring learning because the subject includes repetition	10	10
Creating curiosity in students	2	2
Supporting the development of decision making skills	1	1
Teacher Oriented		
Identifying the missing points of the students	9	9
Ensuring all students participate in the lesson	9	9
Facilitating teachers in assessment	8	8
Compliance with the principle of economy	6	6
Usefulness	2	2
Saving time	1	1
Learning Environment Oriented		
Creating a fun learning environment	6	6
Creating a competitive environment among students	4	4
Total	99	99/100

According to Table 6, pre-service teachers expressed the advantages of Plickers application in three categories, namely students, teachers, and learning environment. Accordingly, advantages of the application are stated as students being able to see the evaluation results quickly, increasing their interest and motivation towards the class, attracting their attention and motivation towards the class, and easily identifying the problematic areas suffered by each of the students. Aybike listed the advantages of the application as follows: "It allows for the students to have fun compared to classical

measurement and evaluation. It becomes clear which subjects students have difficulty in learning and which subjects they do not understand in general and on an individual basis." Selin indicated the benefits provided by the application as follows: "It was appreciated by the students and they participated with pleasure. The application activated the students and motivated the lesson. The fact that it was a different application attracted their attention, so the interest in the course increased even more. The application was appreciated by the teacher, and it contributed to the evaluation of the students." Sanem stated that the application allowed the students to learn bu having fun, that the practice teacher observed and liked this application, adding that she would also use it in the future. The findings obtained from the statements of the pre-service teachers regarding the disadvantages of the application are given in Table 7.

Table 7. *Opinions of the participants on the difficulties encountered in the implementation process of Plickers*

Disadvantages of Plickers App	f	%
Sourced from Students		
Difficulty in practice due to the large number of students	7	14
Difficulty detecting scanned QR codes	6	12
Students have difficulty keeping their QR codes	6	12
Making classroom management difficult	6	12
Causing cheating among students	5	10
Students have difficulty in understanding the application	5	10
Causing noise	4	8
Application takes too much time	3	6
Students in the back row have difficulty seeing the questions	1	2
Sourced from Application		
There is a quota of questions due to the paid application	7	14
Total	50	100

As can be seen from Table 7, it is seen that the disadvantages of the application are mostly student-related, which are based on the overcrowdedness of the classrooms. The pre-service teachers listed the disadvantages of the application as difficulty in tracking which student's QR code was read or not during the application process, inability to read the answer as the fingers of the students are on the QR code while lifting it towards the scanner, the competition environment it creates among students, the uproar occurring in the classroom when they give the correct answer, which makes classroom management difficult, and the difficulty of establishing control due to the number of students, thus causing some students to cheat. Regarding the subject, Aybike said: "The large class size made it difficult for students to understand. It can also lead to activities such as cheating." Esin stated: "It was difficult to manage the classroom and prevent students from talking to one another. Even though I explained the nature of the application to the students, I wasted time because they did not keep the code properly while reading the QR code." Sonay, on the other hand, explained the disadvantages of the application as follows: "My class had 42 pupils. In crowded classrooms, there may be noise problems which compromise classroom management. In addition, students are likely to interact too much, so they can cheat."

When Tables 6 and 7 and the direct quotations reflected from pre-service teachers are examined, it can be seen that the application has several advantages and that they outnumber its disadvantages. Pre-service teachers stated 99 (f) opinions as regards the advantages of the application whereas 50 (f) opinions indicated its disadvantages.

Discussion and Conclusion

In this study, which aimed to reveal the experiences of social science pre-service teachers regarding the Plickers Web 2.0 application that they carried out with secondary school students in social

studies classes, conclusions based on findings, comparison of the findings with the literature, and recommendations are provided below.

It has been revealed that teachers evaluated the preparation and implementation processes of Plickers application as "easy". Zengin, Bars and Şimşek (2017) showed in their study conducted with mathematics pre-service teachers that Plickers was applicable in classes. As a result of the study, it was found out that all pre-service teachers found Plickers application process fun. It has been determined that the application, which provides an enjoyable measurement and evaluation environment, is asked to be repeated frequently by the students. Similarly, Chou (2022), in his study with primary school students, revealed that when the application is adopted as a formative assessment tool, it contributes to an enjoyable learning environment. López García (2016), Wood, Brown, and Grayson (2017) and Mshayisa (2020) also concluded in their studies that the participants found the Plickers application user-friendly.

According to the pre-service teachers, the advantages of Plickers application for students are that it increases their interest and motivation towards the class, improves learning as it allows for repeating the topics, ensures that exam results are quickly viewed, and increases attention and motivation towards the course. In addition, it was found out that the application offered some advantages to the teachers. As such, it allows for the teachers to quickly identify the topics that are not completely learned by the students, engages all students actively to the class, and facilitates assessment. In addition, the application provided an entertaining environment and created a competitive environment among students. In their study, Zengin, Bars and Şimşek (2017) concluded that mathematics pre-service teachers listed the advantages of as follows: it facilitates assessment for teachers, provides detailed and instantaneous analysis results, saves time, and increases students' participation and motivation in the class. Yaylak (2017) found out that Plickers application implemented in social studies course provided a fun learning environment, created enthusiasm among the students, increased class participation, and provoked the desire to use the application again. In her study conducted with university students, Mshayisa (2020) determined that Plickers increased student participation and helped them in evaluation. Wood, Brown and Grayson (2017), in their study on academics and university students, showed that Plickers made the interaction between lecturers and students a pleasant experience. Kent (2019) emphasized that with this application students could perform quick self- evaluations, and teachers could obtain instant assessments as to the topics that the students were good and bad at. Masita and Fitri (2020) found in their study conducted with teachers and students on English teaching that the application could assist formative assessment by providing teachers quickly with student responses and assessment data. They also concluded that it increased student motivation and participation. Chou (2022) demonstrated that Plickers usage positively affected learning performance of students by entertaining them and increasing active participation. Tuncer and Şimşek (2019) found out that Plickers application positively affected academic success in secondary school students. Korkmaz et al. (2019) conducted a study on eighth grade students and concluded that exams conducted through Plickers caused less anxiety than the classical exams, that it positively affected their academic achievement, and that students were pleased to see their results instantly. López García (2016) similarly found that providing a quick real-time assessment and motivating students are the prominent features of Plickers application. On the other hand, the fact that Plickers does not require any device for students, in other words, its affordability can be described by teachers as a factor facilitating its use (Krause, O'Neil & Dauenhauer, 2017; Wood, Brown, & Grayson, 2017).

It has been found out that the disadvantages of Plickers application mostly stem from students, the main reason being the overcrowded classrooms. It is stated that the classroom size makes it difficult to control whether QR codes are scanned. When students give a correct answer, they cheer over which leads to uproar and cheating among students. In addition, it was concluded that class population complicates class management in such situations. Based on the opinions of the pre-service teachers in the study, it was determined that the advantages of the Plickers application outnumber its disadvantages. Chng and Gurvitch (2018) also revealed that teachers think that the pros of the practice are more than its cons.

Recommedations

Similar to the application in this study, it can be recommended for pre-service teachers that they learn Plickers and other applications and experience them in internship schools by including courses on Web 2.0 technologies in social studies in particular and in all teaching programs in general, especially in the fourth grade which includes teaching practice courses. Thus, it can be ensured that pre-service teachers experience the application and make more use of it in their professional lives, and that students and teachers become familiar with such applications at an earlier stage. On the other hand, in-service training activities and TÜBİTAK-funded education projects involving Web 2.0 tools which target active teachers should be encouraged. Finally, due to the fees of various Web 2.0 tools, the opportunities offered by these tools cannot be utilized sufficiently because free versions only allow access to their basic content. In this respect, it can be ensured that universities cover the license fees of this application to grant full access and make them available for pre-service teachers. A similar action can be taken by the Ministry of National Education and its usage by teachers can be encouraged.

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Contribution Rate of Researchers

Author 1: 100%

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Conflict Statement

There is no conflict of interest in the research.

Genişletilmiş Türkçe Özet

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Ölçme ve Değerlendirmenin Eğlenceli Hali "Plickers": Sosyal Bilgiler Öğretmen Adaylarının Deneyimi

Giriş

Web 2.0 teknolojilerinin en belirgin özelliği kullanıcılar arasında iletişimi güçlendirerek onların sosyalleşmelerini sağlamaktır (Chen, Harris & Shang, 2009). Ancak Web 2.0 teknolojilerinin en ayırt edici özelliği etkileşim temelli olmalarıdır. Ketelhut'un (2019: 24) çalışmasında bir katılımcı etkileşimli teknolojiyi "farklı öğrenme yeteneklerine sahip öğrencilere ulaşmak için görsel ve işitsel öğrenme stillerini kullanmanın harika bir yolu" olarak ifade etmiştir. Animasyon, dijital hikaye, sınıf yönetimi, sosyal ağ gibi çok farklı kategorileri bulunan web 2.0 araçlarının bu araştırma özelinde ele alınacak bir diğer kategorisi ise ölçme ve değerlendirmedir. Eğitimde öğrenmenin gerçekleşip gerçekleşmediği ancak ölçme ve değerlendirme ile bilinebilir (Chng & Gurvitch, 2018). Bu kapsamda amacına göre değerlendirme türleri tanılayıcı, biçimlendirici ve değer biçmeye yönelik yapılabilmektedir. Eğitim kurumlarında ölçme ve değerlendirme süreçlerinin daha çok geleneksel yöntemlerle gerçekleştirildiği; yalnızca ölçme ve değerlendirme aşamasında değil öğrenme-öğretme sürecinin her aşamasında web 2.0 araçlarından çok az yararlanıldığı söylenebilir. Nitekim Şenyurt ve Şahin (2022) gerçekleştirdikleri araştırmada öğretmenlerin web 2.0 araçlarına ilişkin bilgilerinin sınırlı olduğu ve bu araçlardan nadiren yararlandıklarını tespit etmişlerdir. Bu algılarının sınırlı ve uygulama sıklıklarının az olmasının temelinde ise öğretmenlerin hizmet öncesinde bu içeriklere ilişkin derslerle karşılaşmaması yer almaktadır. Buna ilişkin Aldır (2014) yapmış olduğu çalışmada öğretmen adaylarının lisans döneminde bu içeriklere ilişkin dersleri yeterli görmediklerini tespit etmiştir. Alanyazında Plickers uygulamasına ilişkin ortaokul (Arzfi ve arkadaşları, 2022; Cin Şeker, 2020; Korkmaz ve arkadaşları, 2019; Tuncer & Şimşek, 2019; Yaylak, 2017) ve üniversite öğrencileriyle (Masita & Fitri, 2020; Mshayisa, 2020; Wood, Brown ve Grayson, 2017; Zengin, Bars & Şimşek, 2017) Plickers uygulamasına ilişkin görüş ve tutumlarını belirlemeye yönelik çeşitli çalışmalar gerçekleştirilmiştir. Ancak bu çalışma sosyal bilgiler öğretmen adaylarının kendilerinin bir öğrenci olarak Plickers'ı önce öğrenip (derste) daha sonra derste

ve arasınavlarında deneyimlemesinin ardından uygulamayı stajer bir öğretmen olarak (Öğretmenlik Uygulaması I dersi kapsamında) ortaokul öğrencilerine uygulamasını içermesi, hem öğretmen adaylarının uygulamaya ilişkin görüşlerinin hem de ortaokul öğrencileri üzerindeki etkilerine ilişkin gözlemlerine yer verilmesi açısından diğer çalışmalardan ayrılmaktadır. Bu kapsamda araştırmanın amacı, bir devlet üniversitesinin Sosyal Bilgiler Öğretmenliği programında açılan Sosyal Bilgilerde Bilişim Teknolojileri dersi kapsamında öğretmen adaylarının ortaokul öğrencileriyle gerçekleştirdikleri Plickers uygulamasına ilişkin deneyimlerini ortaya koymaktır.

Yöntem

Sosyal bilgiler öğretmen adaylarının Plickers web 2.0 uygulamasına ilişkin deneyimlerinin ortaya koyulmasının hedeflendiği bu araştırmada nitel araştırma yöntemlerinden biri dolan doküman incelemesi kullanılmıştır. Doküman incelemesi, araştırılması hedeflenen konu hakkında bilgi içeren yazılı kaynakların analizini kapsar (Yıldırım ve Şimşek, 2018). Derslerdeki öğrenci çalışmaları, kişisel bir mektup, okul kayıtları, bir sanat eseri, gazeteler vb. gibi dokümanlar nitel çalışmalar için oldukça değerli ve açıklayıcı olabilmektedir (Yin, 2011). Bogdan ve Biklen (2022) de sınıf ödevleri için yazılan anlatıların potansiyel olarak zengin veri kaynakları olduğunu ve bunun araştırmacılar tarafından da sıklıkla kullanıldığını ifade etmişlerdir. Bu bağlamda araştırmada 2021-2022 ile 2022-2023 eğitim-öğretim yılında öğretmen adaylarının ders kapsamında hazırladıkları ürün dosyalarında bulunan ve ele alınan olguya dair deneyimlerini aktardığı yansıtıcı metinlerden yararlanıldığı için doküman incelemesi tercih edilmiştir. Araştırmanın çalışma grubunu bir devlet üniversitesinde 2021-2022 ile 2022-2023 eğitim-öğretim yılında Sosyal Bilgiler Öğretmenliği programının dördüncü sınıfında öğrenim gören 24 öğretmen adayının ders kapsamında hazırladıkları ürün dosyalarında yer alan yansıtıcı metinler oluşturmaktadır. Araştırmada veri analiz yöntemlerinden biri olan doküman inceleme kullanılmıştır. Bowen (2009: 27) doküman analizini "hem basılı hem de elektronik materyalleri gözden geçirmek ve değerlendirmek için sistematik bir prosedür" olarak tanımlamıştır. Verilerin analizinde Corbin ve Strauss'un (2008) gözden geçirme, detaylı inceleme ve yorumlama olmak üzere üç aşamalı doküman analizi sürecinden yararlanılmıştır. Dokümanlar gözden geçirilerek önce kodlara daha sonra ise detaylı incelenerek temalara ulaşmak suretiyle içerik analizine tabi tutulmuştur.

Bulgular

Araştırmanın verilerinden hareketle öğretmen adaylarının Plickers uygulamasının hazırlık ve uygulama süreçlerini kolay olarak değerlendirdikleri belirlenmiştir. Ayrıca öğretmen adaylarının tümünün Plickers uygulama sürecinin eğlenceli olduğunu ifade ettikleri görülmüştür. Eğlenceli bir ölçme ve değerlendirme ortamı oluşmasını sağlayan uygulamanın öğrenciler tarafından sıklıkla tekrarlanması isteğinin de oluştuğu tespit edilmiştir. Öğretmen adayları Plickers uygulamasının öğrencilere yönelik avantajlarını öğrencilerin derse karşı ilgi ve motivasyonunu artırması, konu tekrarına fırsat tanıması nedeniyle öğrenmeyi, değerlendirme sonuçlarını hızlıca görüntülemeyi ve derse karşı dikkat çekme ve güdülemeyi sağlaması olarak ifade etmişlerdir. Diğer yandan Plickers uygulamasının dezavantajlarını ise daha çok öğrenci kaynaklı sorunlar olarak nitelendirdikleri ve başlıca sorunun sınıflardaki öğrenci sayısının fazla olmasından kaynaklandığı ifade etmişlerdir.

Tartışma ve Sonuç

Sosyal bilgiler öğretmen adaylarının, ortaokul öğrencileriyle, sosyal bilgiler derslerinde gerçekleştirdikleri Plickers Web 2.0 uygulamasına ilişkin deneyimlerinin ortaya koyulmasının

amaçlandığı bu araştırmada bulgulardan hareketle sonuçlara ve sonuçların alanyazınla karşılaştırılmasına yer verilmiştir.

Öğretmen adaylarının Plickers uygulamasının hazırlık ve uygulama sürecini kolay olarak değerlendirdikleri ortaya koyulmuştur. Zengin, Bars ve Şimşek (2017) matematik öğretmen adaylarıyla gerçekleştirdikleri çalışmada Plickers'ın derslerde uygulanabilir olduğunu ortaya koymuştur. Araştırma sonucunda öğretmen adaylarının tümünün Plickers uygulama sürecinin eğlenceli olduğunu ifade ettikleri belirlenmiştir. Eğlenceli bir ölçme ve değerlendirme ortamı oluşmasını sağlayan uygulamanın öğrenciler tarafından sıklıkla tekrarlanması isteğinin de oluştuğu tespit edilmiştir. Benzer şekilde Chou (2022) da ilkokul öğrencileriyle gerçekleştirdiği çalışmasında uygulamanın biçimlendirici bir değerlendirme aracı olarak benimsendiğinde eğlenceli bir öğrenme ortamına katkı sağladığını ortaya koymuştur. López García (2016), Wood, Brown ve Grayson (2017) ile Mshayisa (2020) da gerçekleştirdikleri çalışmalarda katılımcıların Plickers uygulamasının kullanımının kolay olduğunu düşündükleri sonucuna ulaşmışlardır.

Öğretmen adaylarına göre Plickers uygulamasının öğrencilere yönelik avantajlarının öğrencilerin derse karşı ilgi ve motivasyonunu artırması, konu tekrarına fırsat tanıması nedeniyle öğrenmeyi, değerlendirme sonuçlarını hızlıca görüntülemeyi ve derse karşı dikkat çekme ve güdülemeyi sağlaması olarak ifade ettikleri sonucuna ulaşılmıştır. Ayrıca uygulamanın öğretmenler için de birtakım avantajlar oluşturduğu tespit edilmiştir. Buna göre öğrencilerin eksik olduğu konuların hemen tespit edilmesi, tüm öğrencileri süreçte aktif kılması ve değerlendirmede kolaylık sağlaması uygulamanın öğretmenler için sağladığı avantajlar olduğu ortaya çıkmıştır. Ayrıca uygulamanın eğlenceli bir ortam oluşturmasının yanı sıra ve öğrenciler arasında rekabet ortamı da oluşturduğu sonucuna ulaşılmıştır. Zengin, Bars ve Şimşek (2017) da çalışmalarında matematik öğretmen adaylarının Plickers'ın öğretmenler için değerlendirmeyi kolaylaştırması, ayrıntılı ve anlık analiz sonuçları sunması, zamandan tasarruf sağlaması ve öğrencilerin derse katılımı ve motivasyonlarını artırmasını uygulamanın avantajları olduğunu ifade ettikleri sonucuna ulaşmıştır. Yaylak (2017) da sosyal bilgiler dersinde gerçekleştirdiği Plickers uygulamasının sınıfta eğlenceli bir öğrenme ortamı sağladığını, öğrencilerde heyecan uyandırdığını, derse katılımı artırdığını ve uygulamayı tekrar kullanma isteği oluşturduğunu tespit etmiştir. Mshayisa (2020) da üniversite öğrencileriyle gerçekleştirdiği çalışmada Plickers'ın öğrenci katılımını artırdığını ve kendilerini değerlendirmeye yardımcı olduğunu tespit etmiştir. Wood, Brown ve Grayson (2017) akademisyenler ve üniversite öğrencileriyle gerçekleştirdikleri çalışmalarında Plickers uygulamasının eğitimen ve öğrenciler arasındaki etkileşimi keyifli bir hale getirdiğini ortaya koymuşlardır. Kent (2019) ise uygulama sayesinde öğrencilerin kendilerini hızlı bir şekilde değerlendirebildiklerini, öğretmenlerin de öğrencilerin hangi konularda iyi hangi konularda eksik olduğuna ilişkin anlık değerlendirmeler elde edebildiğini ifade etmiştir. Masita ve Fitri (2020) de İngilizce öğretimine ilişkin öğretmen ve öğrencilerle gerçekleştirdikleri çalışmada uygulamanın öğretmenlere öğrenci yanıtlarını ve değerlendirme verilerini hızlı şekilde sunması ile biçimlendirici değerlendirmeye yardımcı olabileceğini, öğrenci motivasyon ve katılımını da artırdığını tespit etmiştir. Chou (2022) da Plickers kullanımının öğrencilerin eğlenerek ve aktif katılım sağlayarak öğrenme performanslarını olumlu etkilediğini ortaya koymuştur. Tuncer ve Şimşek (2019) de Plickers uygulamasının ortaokul öğrencilerinde akademik başarıyı olumlu yönde etkilediğini tespit etmişlerdir. Korkmaz ve arkadaşları (2019) da sekizinci sınıf öğrencileriyle yaptıkları araştırmada Plickers ile gerçekleştirilen sınavın klasik sınava göre daha az kaygıya neden olduğu, akademik başarılarını olumlu yönde etkilediği ve öğrencilerin kendi sonuçlarını anında görmesinden hoşnut olduğu sonucuna

ulaşmışlardır. López García (2016) da benzer şekilde Plickers'ın gerçek zamanlı hızlı bir değerlendirme sunması ve öğrencileri motive etmesinin uygulamanın öne çıkan özellikleri olduğunu tespit etmiştir. Diğer yandan Plickers'ın öğrenciler için herhangi bir cihaz gerektirmemesi başka bir ifadeyle ekonomik olması öğretmenler tarafından kullanımını kolaylaştırıcı bir faktör olarak nitelendirilebilir (Krause, O'Neil & Dauenhauer, 2017; Wood, Brown ve Grayson, 2017).

Plickers uygulamasının dezavantajlarının daha çok öğrenci kaynaklı olduğu, öğrenci kaynaklı sorunların başlıca nedeninin ise sınıflardaki öğrenci sayısının fazla olmasından kaynaklandığı belirlenmiştir. Nitekim öğrenci sayısının fazla olmasının uygulamada kullanılan karekodlarının taranıp taranmadığını takip etmeyi zorlaştırdığı, öğrencilerin doğru cevaplarında sevinç gösterilerinde bulunması nedeniyle gürültüye ve bazı öğrenciler arasında kopya çekme eyleminin yaşanmasına neden olduğu tespit edilmiştir. Ayrıca öğrenci sayısının bu tür durumlara neden olarak sınıf yönetimini de zorlaştırdığı sonucuna ulaşılmıştır. Araştırmada öğretmen adaylarının görüşlerinden hareketle Plickers uygulamasının avantajlarının dezavantajlarından daha fazla olduğu tespit edilmiştir. Chng ve Gurvitch (2018) de öğretmenlerin uygulamanın artılarının eksilerinden daha fazla olduğunu düşündüklerini ortaya koymuştur.

Öneriler

Araştırmanın sonuçlarından hareketle özelde sosyal bilgiler genelde ise tüm öğretmenlik programlarının özellikle öğretmenlik uygulaması derslerinin bulunduğu dördüncü sınıflarında Web 2.0 teknolojilerine ilişkin derslere yer verilerek öğretmen adaylarının Plickers ve diğer uygulamaları öğrenmesi ve staj okullarında deneyimlemesi önerilebilir. Böylelikle öğretmen adaylarının deneyimlemeleri dolayısıyla mesleki yaşamlarında bu uygulamalardan daha fazla yararlanması ve mevcut öğrenciler ile öğretmenlerin de bu uygulamalarla daha erken karşılaşması sağlanabilir. Diğer yandan halihazırda görev yapan öğretmenlere yönelik Web 2.0 araçlarına ilişkin hizmetiçi eğitimlerin ve TÜBİTAK destekli eğitim projelerinin artırılması önerilebilir. Son olarak çeşitli Web 2.0 araçlarının ücretleri nedeniyle yalnızca temel düzeydeki içeriklerine erişim imkanı vermelerinden dolayı bu araçların sunduğu olanaklardan yeterince yararlanılamaktadır. Bu doğrultuda uygulamalara tam erişim sağlanabilmesi için üniversitelerin uygulamanın lisans ücretlerini karşılayarak öğretmen adaylarının kullanımına sunması sağlanabilir. Benzer bir faaliyet Milli Eğitim Bakanlığı tarafından da gerçekleştirilerek öğretmenlerin kullanımı teşvik edilebilir.