

Implementation of the Digital Assessment Tool ‘Kahoot!’ in Elementary School

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SUMMARY

The purpose of this study was to investigate the usability of the Kahoot!, the digital assessment tool, in elementary schools. With this respect, the participants were selected by using the simple random sampling method. 23 students and 1 teacher in state elementary school in Muğla in Turkey participated in the study in the spring term of the 2017-2018 academic year. The Kahoot! was implemented in the social studies class for 4 weeks. It was a qualitative and quantitative study. The survey technique was used to collect data and the data were analyzed by using the descriptive analysis technique. The results of the study indicated that the students thought the Kahoot! was enjoyable, informative, useful, perfect and fine. The students also rated the difficulty level in using the Kahoot! application as ‘Not difficult’, ‘A Little Difficult’ and ‘Difficult’. These challenges were the difficulties in reaching the Kahoot! website, the problems about the internet connection, the difficulties in reading the board, the difficulties in selecting the answers and the application’s disconnections because of the connection timeouts. The teacher, however, displayed positive opinions about the Kahoot! application.

Keywords: Kahoot!, Online Assessment and Evaluation, Social Sciences

INTRODUCTION

Assessment and Evaluation in Education

The concepts such as learning, teaching, experience, testing and evaluation, and teaching-learning process have an important place in education (Şaşmaz Ören, 2014, p.277). The process of teaching- learning is always in a cycle with planning, implementation and assessment (Kaya, 2003). Testing and evaluation are required in each area where teaching occurs, since assessment and evaluation are essential components in teaching (Başol, 2015). Increasing the studies showing that each part of the education process is closely related to the measurement and evaluation is the factor that makes measurement and evaluation an indispensable element (Yıldız & Uyanık, 2004).

Assessment refers to the process of observing the changes in the lives of the people (Kaya Uyanık & Çalışkan, 2015, p.304). In the assessment procedure, the existing features are described with respect to the resources (Keray Dinçel, 2016). Evaluation, on the other hand, is the process of decision-making based on the assessment results. The concept of evaluation incorporates assessment (Şaşmaz Ören, 2014, p.277). That is why, we should decide on what to assess and how to evaluate this later (Yıldız ve Uyanık, 2004). The evaluation checks whether the elements that constitute the educational system are operating or not and makes the system operate by determining the non-operating parts (Şenel Çoruhlu, Er Nas & Çepni, 2009).

There is a purpose to do assessment and evaluation in education. It is important to actualize the objectives specified in the curriculum and determine the desired level of achievement. Examples of these are increasing the knowledge and skills of the students in the learning-teaching process and developing the education programs with assessments and evaluations. Even though the individual's achievements are determined by the assessment and evaluation activities, the main goal is to keep the education programs alive under varying conditions (Karadüz, 2009).

The aim is to classify the students based on their possession of certain features in the traditional assessment and evaluation in which there are question types such as fill-in-the-blanks, matching, and multiple choice. However, according to the Integrative Learning Theory, the aim is to define where the learner stands in the learning-teaching process in the alternative assessment and evaluation. Alternative assessment and evaluation techniques that foresee identifying learners with different characteristics are student portfolios, drama, performance evaluation, self-evaluation, rubric, structured grid, project and so on (Şenel Çoruhlu, Er Nas & Çepni, 2009). The alternative assessment reveals the learning outcomes of the students in the mental, psychomotor, and affective areas in different ways. The cognitive, emotional, and psychomotor potential of a person and displaying this potential show his performance (Adanalı & Doğanay, 2010).

Digital Assessment in Education

Digital assessment tools provide teachers with instant feedback and make them do individual or group assessments in a lively and competitive environment (Yılmaz, 2017). Digital assessment in education is important in terms of feedback, control of the learning rates that vary from individual to individual, and learning quality to be achieved at the end of the assessment process. Continuous measurement and evaluation activities should be carried out in digital education in order to avoid problems in the aforementioned issues (Balta and Türel, 2013).

Hague & Payton (2011) propose some suggestions for the teachers on the use of the digital technologies in the learning and teaching process. These recommendations are; be informed about the technological tools to be used, identify supplementary resources to be needed, and prepare contingency activities for the students against the possibility of encountering any problems. Storing a vast quantity of data that emerge as a result of the interaction of the students with the digital environment and the access to this database should be secured. It should be known whom to contact with in the cases that a website that one is using is blocked. Students should be informed about the copyright issues of the content they upload to a web site and necessary precautions should be taken in this regard. In order to ensure the quality of the multimedia products to be produced by the students, necessary information should be provided about the tools and methods they will use (as cited in Menzi Çetin & Akkoyunlu, 2017).

Moreover, with the recent widespread use of the Internet, the use of web 2.0 tools has gained importance. The Web 2.0 tools are alternatives that can be used in the realization of interactive activities in learning environments (Yılmaz, 2017). The Web 2.0 is an easy, open and free platform where the web passes from static to dynamic and where the users actively create contents by sharing, interacting and collaborating with others (Tavluoğlu, 2013). The Web 2.0 was first introduced in 2003 by O'Reilly Media as a new way of sharing information over the Internet (Karaman, Yildirim & Kaban, 2008).

The scope of the Web 2.0 technologies has been constantly expanding. The reasons for this are the Web 2.0 technologies' interactions between the users and web applications, interactions between users, collaborative work and easy access to information on the Internet. These opportunities have provided chances for the use of the Web 2.0 technologies and their standards in the field of education (Deperlioglu & Köse, 2010). The Web 2.0 technology offers innovations such as blogs, video players and video broadcast subscriptions, wikis, social networks, bookmarks, image and video sharing, and mixed web sites (Genç, 2010).

Kahoot! and Its Usage in Education

Teachers should draw the students' attention throughout the course, since their attention begins to decrease after the first ten minutes of the course. Teachers need to change the environment and engage the students in order to regain their attention. The Kahoot! is a free assessment program that can be used at any time of the lesson to increase the participation of the students to the lesson by the teachers and it can be used as a formative assessment, as well. (Barnes, 2017).

According to Plump & Larosa (2017), the Kahoot! that requires limited instructor or student training, is a means of providing vitality, student participation, and meta-cognitive support to the classes. This application was created and developed by teachers, students, businesspersons and social users (Susanti, 2017). The Kahoot! can easily be accessed via smartphones or PCs (Wichadee & Pattanapichet, 2018).

Since March 2016, the Kahoot! has been used by 20 million of 55 million American primary and secondary school students. The Kahoot! and similar applications are important elements in increasing students' cognitive capacity by offering differentiated learning experiences (Yılmaz, 2017).

Underdal & Sunde (2014) state that the Kahoot! plays an important role in gamification of the simple assessment programs and contributes to the success of the learners at different levels (as cited in Bolat, Simsek & Ülker, 2017). In practice, background music, pictures and videos can be added; quizzes can be recorded and retrieved via Internet (Barnes, 2017). In the Kahoot! application, the teacher can select one of the options among quiz, discussion or questionnaire displayed under the heading "Create New Kahoot!" (Dellos & Korea, 2015) by logging into his/her account. Besides, the scores can be obtained instantly with a teacher-controlled display in the classroom (Walsh, 2017). In addition, the quiz title is widely used in Kahoot! (Graham, 2015). Students can login the system with an access code and a username (Ismail & Mohammad, 2017).

The responding time can be set in the Kahoot!. When the time is over, a sound is heard and the class panel immediately checks the correct and incorrect answers of the class. Then, five students with the highest scores in the class are displayed (Singer, 2016). It also provides an active and relaxing environment by helping students to improve their performances (Ren & Wagner, 2016).

The Kahoot! application is also designed to be suitable for the students with learning disabilities and special educational needs. In addition, the use of visual cues (such as different colors and shapes), and simple easy-to-read question and answer formats can be used as a group or individually by the students with different learning needs (Inclusive Design, 2010). The purpose of working in this context is to investigate the usability of the Kahoot! in primary school.

METHOD

Research Method

Qualitative research method was adopted in this study to investigate the applicability of the Kahoot!, the digital assessment tool, in elementary school. It is a study in which events and phenomena are revealed in a natural environment by using data collection methods such as qualitative research, interview, observation and document analysis (Yıldırım, 1999).

Participants

23 students studying at the 4th grade and 1 teacher in Toki Şehit Jandarma Yarbay Alim Yılmaz Primary School in Muğla province in Turkey participated in this study in the 2017-2018 academic year.

Data Collection

In order to investigate the applicability of the Kahoot! in elementary school, the implementation was performed for one hour in the social studies course for four weeks.

After the application was performed, opinions of the students were gathered by using questionnaires asking personal information questions and open-ended and closed-ended questions. In addition, opinions of the teacher were obtained by using questionnaires asking open-ended questions and personal information. The questionnaire for students contained questions about the students' general thoughts about the Kahoot!, the difficulties when using it, and likes and dislikes about it. In the questionnaire prepared for the teacher, there were questions about his general opinions on the Kahoot! application, and his likes and dislikes about it.

Data Analysis and Discussion

The descriptive analysis technique was used for the analysis of the data. The qualitative data were analyzed by using the NVIVO program. SPSS package program was used for the analysis of the quantitative data. The frequencies and percentages of the data were identified with this program.

FINDINGS

56.5% of the students who participated in the Kahoot! implementation were female and 43.5% were male students. 91.3% of the students owned tablets while 8.7% had no tablets. The minimum daily tablet usage time was five minutes and the maximum tablet usage time was two and a half hours. The average daily tablet usage time of the students was 48.6 minutes.

STUDENTS' OPINIONS ABOUT THE KAHOOT!

General Opinions about the Kahoot!

OPINIONS	YES	SOMETIMES	NO
I can use the Kahoot! easily.	%91,3	%4,3	%4,3
I think the Kahoot! is useful.	%95,7	%0	%4,3

I think the Kahoot! is enjoyable.	%95,7	%0	%4,3
I've got a better understanding of the subject after I've used the Kahoot! application.	%69,6	%0	%30,4
The Kahoot! was interesting.	%87	%8,7	%4,3

Table 1. *General Opinions about the Kahoot!*

Opinions of the students about the Kahoot! application were as follows: 4.3% of the students responded the item "*I can use the Kahoot! easily*" as "no", 4.3% responded as "sometimes", and 91.3% responded as "yes". The items "*I think the Kahoot! is useful*" and "*I think the Kahoot! is enjoyable*" were responded as "no" by the 4.3% of the students, and responded as "yes" by the 95.7% of the students. The item "*I've got a better understanding of the subject after I've used the Kahoot! application.*" was responded as "no" by the 30.4% of the students and responded as "yes" by the 69.6% of the students. The item "*The Kahoot! was interesting.*" was responded by the 4.3% of the students as "no", by the 8.7% of the students as "sometimes", and by the 87.0% of the students as "yes". As a result, it was concluded that the students were mostly satisfied with the Kahoot! application.

The General Opinions of the Students about the Kahoot! Application

General Opinions
It is enjoyable.
It is informative.
It is useful.
It is a perfect application.
It is nice.

Table 2. *The General Opinions of the Students about the Kahoot! Application*

According to Table 2 above, the general opinions of the students about the Kahoot! were stated as the Kahoot! was 'enjoyable', 'informative', 'useful', 'a perfect application' and 'nice'. Under the theme '*it is enjoyable*', a student expressed it as saying, "It is a very useful application and I think it is very fun to do" while another student expressed it by saying, "It is an application that can be useful and we can learn by having fun.". As for the '*it is informative*' theme, a student stated, "I think the Kahoot! is enjoyable and informative".

Another opinion about the Kahoot! was the theme '*it is useful*'. This thought was expressed by a student by stating, "Well, I think it is beneficial for those who have not even listened to the lesson. When we do not understand the subjects sometimes in the lesson, we can practice them with this application." Another student expressed her opinion about the theme, '*it is a perfect application*' by saying, "*It is a perfect application. I want to do it every day.*" The theme, '*it is nice*' was expressed by a student by saying, "*It is a very nice application, I wish we could always do it.*"

Difficulties Faced While Using the Kahoot!

DIFFICULTIES
Not difficult.
Difficult.

<p>A little difficult.</p> <p>The difficulty of reaching the Kahoot! website.</p> <p>Internet connection problems.</p> <p>Having difficulty reading the board.</p> <p>Difficulty in selecting the options.</p> <p>Disconnection due to connection timeouts.</p>

Table 3. *Difficulties Faced While Using the Kahoot!*

According to the Table 3, the students asserted the difficulty situations in using the Kahoot! with the statements as follows: *'Not difficult', 'Difficult.', 'A little difficult.', 'Having difficulty of reaching the Kahoot! website.', 'Having Internet connection problems.', 'Having difficulty in reading the board.', 'Having difficulty in selecting the answers.', 'Having disconnections due to connection timeouts.'* A student expressed the theme *'Not difficult'* by saying *"I didn't have difficulty, I think It was easy to use"* while another said *"It was both difficult and not difficult. It was in the middle because it was difficult but also easy"* for the theme *'A little difficult'*. As for the theme *'Difficult'*, one student expressed her thought by saying *"I had difficulty so much in using the Kahoot!"*.

A student stated her/his opinion about the theme *'Having difficulty of reaching the Kahoot! website.'* by saying , *"I had a difficulty in using it because the Kahoot! could not be reached when I wrote 'Kahoot!' on the search engine"* while another student expressed her/his thoughts about the theme *'Having Internet connection problems.'* by saying *"I had a little difficulty and that was due to the Internet problem"*. Regarding *'Having difficulty in reading the board.'* theme, a student stated his/her thoughts by saying, *"I had a little difficulty because it was difficult to see the game on the board and play it."*

Regarding *'Having difficulty in selecting the answers.'* theme, a student said, *"It is a little bit difficult to read the board and it is a little difficult to select the circle"*, while another student emphasized the theme *'Having disconnections due to connection timeouts.'* by saying, *"No, it just disconnected when it stopped too much."*

Likes about the Kahoot!

<p>LIKES</p> <p>It is enjoyable.</p> <p>It increases the memorability of the learnt knowledge.</p> <p>It is a good Internet exam.</p> <p>It would make the students study.</p> <p>It provides learning by having fun.</p> <p>It is exciting.</p> <p>It provides a competitive environment.</p> <p>Students can do it with their peers.</p> <p>It displays the ranking.</p> <p>It makes use of tablets.</p>
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<p>The questions are nice.</p> <p>Students can pick nicknames for themselves.</p> <p>It is educational and informative.</p> <p>Students like it in general.</p> <p>It develops intelligence.</p> <p>It scores questions.</p> <p>It provides students comprehend the topic that are not understood during the lesson, with questions.</p> <p>It gives the students the opportunity to do questions.</p> <p>It helps student development.</p> <p>It is appealing.</p> <p>It is appropriate for education.</p> <p>It makes the lesson fun.</p> <p>It provides the students learn more information.</p> <p>It helps students correct the misinformation.</p>
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Table 4. Likes about the Kahoot!

According to Table 4, the student opinions in the context of the ‘Likes about the Kahoot! application’ were stated as follows: *‘It is enjoyable. It increases the memorability of the learnt knowledge. It’s a good internet exam. It would make the students study. It provides learning by having fun. It is exciting. It provides a competitive environment. Students can do it with their peers. It displays the ranking. It makes use of tablets. The questions are nice. Students can pick nicknames for themselves. It is educational and informative. Students like it in general. It develops intelligence. It scores questions. It provides students comprehend the topic that are not understood during the lesson with questions. It gives the students the opportunity to do questions. It helps student development. It is appealing. It is appropriate for education. It makes the lesson fun. It provides the students learn more information. It helps students correct the misinformation.’*

One of the students expressed the theme ‘It is enjoyable’ by saying, *"it is very fun"* while about its feature to ‘increase the memorability of the learnt knowledge’, another student stated, *"I remember what I have learned, the answers etc."* As for its ‘being a good internet exam’, a student said, *"I think that it is a nice internet exam"*.

About the theme that ‘It would make the students study’, a student indicated, *"It makes the students study very well"* while another student expresses his/her opinion by saying, *"In short, it has provided learning by having fun"* about its benefit of ‘providing learning by having fun’. When it comes to the theme ‘it is exciting’, a student said, *"It’s fun, it makes me happy to make a tick there when we do it right. I love it and it is exciting even though I cannot win or play it sometimes."* In terms of the theme about ‘its competitive environment’, a student expressed his/her thought by saying; *"to be the first"* while about the theme ‘students can do it with their peers’, another student stated, *"We can do it with our friends."*

Regarding the theme about ‘displaying the ranking’, one student expressed it by saying, *"the-first-five ranking is very nice"*, while another student reflected the idea of *"with tablets"* on the theme about ‘the use of tablets’. While a student explained the theme about the fact that ‘the questions were nice’ by saying, *"The questions are nice"*,

another student expressed the theme about *'selecting nicknames for themselves'* by saying, *"We can choose our names"*. A student stated the theme about *'being educational and informative'* by saying, *"it is educational and informative"* while on the subject of *'liking it in general'*, a student stated, *"I like everything about it"*. Regarding the theme about *'helping intelligence development'*, a student said, *"my intelligence is getting developed"*. Another student said, *"It also made me understand the subjects better"* as to the theme about how to *'better understand the subjects that were not understood in the lesson with the question'*. In terms of *'scoring the questions'*, a student stated, *"I like its scoring very much"*.

While a student expressed the theme about *'the opportunity to do a question'* by saying, *"We can answer questions"*, a student explained his/her thought regarding *'student development'* theme by saying, *"This Kahoot! application has developed me and it is a fun and enjoyable application"*. In terms of *'being appealing'* theme, a student said, *"We liked the shapes and colors"*, while a student said, *"It is a very educational program"* about the theme about *'being appropriate for education'*.

Regarding the theme that *'lessons are enjoyable with the Kahoot!'*, student said, *"Lessons are fun"*. On *'learning more information'*, a student stated, *"I am learning more information at the same time"*, while about *'correcting the misinformation'*, a student stated, *"Sometimes I understand the correct version of the questions better after I make mistakes"*.

Dislikes about the Kahoot!

DISLIKES
The time limit in the questions leads to mistakes.
The answers/options may be delayed.
The questions do not appear on the student screen.
Only the questions prepared by the teacher can be done.
The access code is not active for a long time.
The competitive environment causes problems among students.
Students are not placed in the ranking.
The questions are difficult.
Not all of the students appear on the score table.

Table 5. *Dislikes about the Kahoot!*

According to the Table 5, the results in terms of the *'Dislikes about the Kahoot! application'* are as follows: *'The time limit in the questions leads to mistakes.'*, *'The answers/options may be delayed.'*, *'The questions do not appear on the student screen.'*, *'Only the questions prepared by the teacher can be done.'*, *'The access code is not active for a long time.'*, *'The competitive environment causes problems among students.'*, *'Students are not placed in the ranking.'*, *'The questions are difficult.'*, *'Not all of the students appear on the score table.'*

About the theme stating that *'the time limit in the questions leads to mistakes'*, a student said, *"It requires so much fastness because it is timed, so mistakes are made in answering the questions"*. In terms of the theme saying that *'the answers/options may be delayed'*, another student said, *"The answers appeared only once but they did not"*.

appear on my device, they were seen later". A student stated, *"It is a little difficult to read the board and to mark the shape."* in the context of the theme that *'the questions do not appear on the student screen.'*

Concerning the theme about *'doing the questions prepared only by the teacher'*, a student stated, *"We cannot do it if our teacher does not prepare questions"* while another student said, *"The password is a little temporary and ends immediately"* as to the *'activation of the access code for a short time'* theme. About that the theme concerning that *'competitive environment causes problems among the students'*, one student expressed his/her thought by saying *"When one becomes the first, the others are upset and sad. It would be better if it was not first, second, third rankings "*. As for the theme about the *'inability of the students to be placed in the ranking'*, a student stated, *"We cannot always be the first, the second and the third"*.

On the *'difficulty of the questions'* theme, a student s stated, *"All of them were difficult questions"*. Considering the theme that *'not all of the students appear on the score table'*, a student said, *"I am nervous and annoyed about that my name does not appear even though I do it correctly"*.

Teacher Opinions about the Kahoot!

General Opinions of the Teacher about the Kahoot! Application

GENERAL OPINION
Positive

Table 6. General Opinions of the Teacher about the Kahoot! Application

Generally, the teacher's opinions about the Kahoot! application appeared positively. The teacher expressed the *'positive'* theme about it, by saying; *"It is a different application. I'm thinking of using it in my lessons. It is interesting for the students. It increased motivation. "*

The Teacher's Likes About the Kahoot!

LIKES
It develops careful reading skills.
It increases motivation.
It makes use of technology.
It is interesting for students.
It attracts attention.

Table 7. The Teacher's Likes About the Kahoot!

In the context of the liked aspects of the *Kahoot!* application, the teacher emphasized that *'it developed careful reading skills, increased motivation, made use of technology, attracted attention and it was interesting for students'*. As for the *'development of careful reading skills'*, the teacher said, *"They read carefully what they read."* When it comes to *'increasing motivation'*, the teacher expressed it by saying; *"The students thought it as interesting. It increased motivation. "*

On the 'making use of technology', the teacher stated, "Students use technology". As for that 'it is interesting for the students', he said, "It's an unusual application. I'm thinking of using it in my lessons. It is interesting for the students. It increased the motivation.". When it comes to that 'it attracts attention of the students', he expressed his ideas by saying " The students paid attention to the lesson, it did not distract their attention " .

CONCLUSION AND DISCUSSION

In this study, it was aimed to investigate the applicability of the Kahoot!, a digital assessment tool, in primary school. According to the results, the students' general thoughts about the Kahoot! application were that it was enjoyable, informative, useful, nice, and a perfect application. The general thoughts of the teacher about the Kahoot! was found as positive.

When the literature was reviewed, Iwamoto, Hargis, Taitano & Vuong (2017) found that the students who used the Kahoot! had a significant difference in the test scores compared to the students who did not use the Kahoot!. Also, the Kahoot! application had the potential to improve and develop the scores of the high score exams. In Pedde (2017), it was observed that the Kahoot! application increased the vocabulary assessment scores, focus and task behaviors of all students. The results of the Student Satisfaction Survey in the study indicated that students found the Kahoot! enjoyable and easy to use.

In Bicen & Kocakoyun (2017), it was revealed that the Kahoot! application was the most preferred application by the students and Android was the most used operating system on their mobile devices. It could also be deduced that the Kahoot!' would be the future learning platform and should be adapted into classroom activities.

Another study about digital games and which involved the Kahoot! revealed that students had a positive attitude towards the digital games in language learning (Wichadee & Pattanapichet, 2018). In the study carried out by Bolat, Şimşek & Ülker (2017), the Kahoot! application and formative assessment activities were found to be enjoyable in an emotional sense and they facilitated the learning process in a cognitive sense.

Zarzycka Piskorz (2016) found that the effectiveness of the Kahoot! application in learning grammar was very high (90%). The results also showed that the use of the Kahoot! or any other game in the class would be welcomed.

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