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Sınıf Cevap Sistemleri için Oyunlaştırma Aracı: Kahoot!

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ÖZET

Öğretim süreci boyunca öğrencilerden anında geri bildirim toplamak için kullanılan sınıf cevap sistemleri (SCS), geçmişte ve günümüzde farklı isimlerle altında kullanılmıştır. Bu isimlere örnek olarak soru-cevap sistemleri, öğrenci yanıt sistemleri, elektronik yanıt sistemleri veya bulut tabanlı sınıf yanıt sistemleri verilebilir. Bu çalışmanın amacı, dönüştürülmüş öğrenmeyi süreçlerinde kullanan eğitimcileri, öğrencilerin Kahoot kullanımı hakkındaki algıları hakkında bilgilendirmektir. Karma yöntem ile gerçekleştirilen araştırmaya 53 lisans ikinci sınıf öğrencisi katılmıştır. Kahoot etkinliği ile ilgili hem nicel hem de nitel veriler, 9 haftalık dönüştürülmüş öğrenme uygulama sürecinin sonunda toplanmıştır. Çalışma sonucunda öğrenciler SCS'nin her ders kapsamında kullanılabileceğini belirtmişlerdir. Öğrenciler ayrıca öğrenme ortamlarında SCS kullanımının derse yönelik motivasyonu artırmanın ve eğlenceli bir öğrenme ortamı yaratmanın etkili bir yolu olabileceğinin altını çizmiştir. Bu nedenle, öğretmenlere, dönüştürülmüş öğrenmede sınıf etkinliklerine karar verirken SCS kullanmaları tavsiye edilebilir.

Anahtar Kelimeler: Kahoot, sınıf cevap sistemleri, oyunlaştırma, dönüştürülmüş öğrenme

The Gamification Tool for the Classroom Response Systems: Kahoot!

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ABSTRACT

Classroom response systems (CRS), which are used to gather immediate feedback from students throughout the teaching process, have been called by different names in the past and present. Examples of CRS implementations include question–answer systems, student response systems, electronic response systems, or cloud-based classroom response systems. The objective of this study is to inform educators who embrace flipped learning about students' perceptions of the use of Kahoot. This study employed a mixed-method research approach with 53 sophomore students. Both quantitative and qualitative data about Kahoot activity were gathered at the end of a 9-week flipped learning implementation process. At the end of the study, the students stated that a CRS may be used within the scope of any lesson. Students also underlined that the use of CRS in learning environments could be an efficient way to increase motivation for the lesson and create an enjoyable learning environment. Therefore, teachers may be advised to use CRS when deciding on classroom activities in flipped learning.

Keywords: Kahoot, classroom response systems, gamification, flipped learning

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1. INTRODUCTION

As the expectations for societies increase, individuals in those societies experience, similarly, increased expectations. It is inevitable that learning environments are affected by these high expectations. With advancements in information technologies, it has become easier to design effective learning environments for students with different learning styles. These changes result in the development of new tools and practices that enrich learning processes. During the design of instructional programs, educators must develop flexible programs that include tools and practices that are suitable for 21st-century learners. Technological developments and increasing access to technology have become important factors for ensuring such flexibility.

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With the proliferation of Internet and mobile device use, learning approaches involving digital experiences have become more frequently preferred in learning environments in comparison to previous years. The 2018 Global Digital Report by We Are Social and HootSuite revealed that more than 4 billion people around the world use the Internet. According to the same report, more than half of the mobile phones used today are "smart" phones because of the low prices of mobile devices and mobile Internet plans. According to the Study on Household Use of Information Technologies by the Turkish Statistical Institution (2017), 80.7% of Turkish households had the opportunity to access the Internet from home on April 2017. This rate had increased by 4.4% in comparison to the same month in 2016. These results indicate that individuals have considerable opportunities for rich Internet experiences at home or in different environments through their devices.

In recent years, many different areas of business from health to tourism, education to banking, and press to transportation provide their services through mobile technologies and actively use Internet and mobile technologies to increase efficiency at work. The fact that mobile technologies facilitate access to information for individuals and support learning everywhere and at any time with user-friendly interfaces and multimedia properties has provided new opportunities for education. Mobile technologies were introduced into educational environments for various purposes (Herrington and Herrington, 2007; Quinn, 2011). Some examples of the use of mobile devices in the classroom include "Bring Your Own Device" initiatives, flipped learning, digital portfolios, and CRS. Mobile devices have taken their place among the indispensables of learning environments which ensure student participation and provide immediate feedback.

1.1. Classroom Response Systems

Classroom response systems (CRS), which are used to gather immediate feedback from students throughout the teaching process, have been called by different names in the past and present. Examples of CRS implementations include question–answer systems, student response systems, electronic response systems, or cloud-based classroom response systems. The first modern CRS was used in the 1950s during the use of learning materials in military colleges. CRS that allow responses from any seat in the classroom evolved to include design elements such as the use of A, B, C, D, E buttons and the ability to give feedback to students through vibration when they pressed the correct button. Since the 1950s, different designs have been used, such as green or red lights that switch according to whether the answer is right or wrong (Judson and Sawada, 2002).

Similarly, the intended use of the CRS has varied. Sometimes teachers have adjusted their lessons based on student responses. They have sometimes decided to adjust the speed of a lesson or repeat part of a subject based on the accuracy of students' responses through the CRS. Accordingly, students also have a chance to adjust the speed or review the content. In 21st-century classrooms, participation in a CRS occurs mostly through mobile devices, and the Kahoot is preferred more frequently than others in the design of teaching environments.

1.2. What is Kahoot?

Kahoot, one of today's popular CRS, was released in September of 2013 by the entrepreneurs Johan Brand, Jamie Brooker, and Morten Versvik in cooperation with the Norwegian University of Technology and Science. Students try to select the correct answer and increase their score using any device with an Internet connection (e.g., desktop computer, notebook, tablet, mobile phone) when playing Kahoot. Kahoot allows teachers to create four types of games: quiz, discussion, survey, and jumble. This app has many advantages in the learning environment:

- It creates enjoyable games about specified topics.
- It offers a simple interface that allows anyone to create tests, surveys, discussions, etc. easily.
- It is easily accessible via different devices such as computers, tablets, or mobile phones with Internet connections.
- It facilitates learning with a rich audio and visual framework as well as a gamified substructure.
- It provides reports that allow participants' performances to be analyzed.

In this research, Kahoot, a widely preferred classroom activity, has been used in the classroom setting for flipped learning. Flipped learning is a blended learning approach in which the first learning stage is carried out in an online environment outside the classroom, and the reinforcement stage is implemented face-to-face in the classroom. The most critical step in adapting this approach to the learning environments is the organization of in-class activities. The criticism regarding this approach is that students who come to the classroom without fulfilling the initial learning requirements would be mistreated. Therefore, the design of the in-class activities for students with lower level of readiness should be considered an important aspect of the approach. The advantages of Classroom Response Systems (CRS) that are preferred in the in-class process may differ based on the type of lesson being taught using the flipped learning approach. While it is possible with Kahoot to measure the current readiness levels of the students at the very beginning of the in-class process and direct them towards in-class activities based on their levels of readiness, it is also likely to take a general photograph of their current level of knowledge at the end of the in-class process.

While the participants gain scores by giving the correct answers in the Kahoot, they move up on the leadership table and win rosette at the end of the exercise. The fact that game components, such as score, leadership table, and rosette, are included within the content of the exercise indicates that this application can be considered a gamification tool. Therefore, gamification

is identified as the use of game components in non-game environments. Based on theoretical game and motivation models, gamification includes game components such as badges, levels that involve struggles, leaderboards and the exchange of gifts between participants working in cooperation (Çağlar and Arkün Kocadere, 2015). The raising interest in gamification nowadays may be described through three important developments. First of all, scientific studies are considered important in order to better understand the issue regarding what makes computer games attractive and successful with the development of computer games industry in the last 20 years. In the second place, sharing, participation and discussion attitudes of the individuals and institutions have changed with the proliferation of mobile and web-based technologies. Finally, the companies always look for recent and effective ways to better learn and influence the behaviours of the employees (Robson et al., 2015). Such studies have also had a positive impact on the use of gamification in teaching environments. The use of gamification has increased both as part of the in-class activities and online learning environment.

1.3. Related Studies

Studies on the use of Kahoot in learning environments have gained speed since 2015. In the studies by Zengin, Bars and Şimşek (2017), the use of Kahoot and Plickers software in mathematics classes in the formative assessment process is analyzed, together with the opinions of the preservice teachers. In the study in which exercises were performed with respect to the use of Kahoot and Plickers in formative assessment process, researchers stated that Kahoot and Plickers have some positive contributions in preservice teachers' assessment process. They stated that CRS facilitate assessment and save time by providing detailed and immediate data analysis. In their study, Bolat, Şimşek and Ülker (2017) analyzed the impact of CRS on the success levels of preservice teachers and their opinions about the system. The researchers stated that formative assessment activities performed through Kahoot were reported as enjoyable and facilitated the cognitive learning process. The study by Yapıcı and Karakoyun (2017) examined the opinions of preservice teachers regarding the use of Kahoot in teaching biology and the impact of the use of Kahoot, as a gamification environment, on the motivation levels of preservice teachers. They found that the motivation levels of the preservice teachers increased following the implementation process and that the teachers mostly stated positive opinions about Kahoot. Wang and Zhu (2016) also highlight that Kahoot increases motivation and lesson attendance, and helps teachers by providing a visual and detailed report. Rodriguez-Fernandez (2017) reviewed Kahoot used as a classroom response system, and stated that university students considered Kahoot to be a tool that enriched learning and increased competition; but in the view of Rodriguez-Fernandez, the implementation of Kahoot increased in-class participation and attendance at lessons rather than having an impact on students' success.

When the related studies are reviewed, the findings that emerge are that CRS may be used as an assessment tool by the students (Zengin, Bars and Şimşek, 2017); it is enjoyable and helpful for learning (Grinias, 2017; Bolat, Şimşek and Ülker, 2017); it increases attendance and competition (Kapp, 2012; Plump and Larosa, 2017; Rodriguez-Fernandez, 2017); and it ensures attention and motivation (Wang and Zhu, 2016; Yapıcı and Karakoyun, 2017). However; no studies have been found indicating that it has a significant positive or negative impact on academic success. It is very important that teachers make the right decisions when the selection of in-class activities in the flipped learning. This study differs from the previous researches and aims to share the positive or negative aspects of CRS with teachers who are thinking of using a flipped learning approach in their lessons.

2. METHODOLOGY

The study was conducted using a sequential explanatory design. This type of design is carried out in two different interactive stages: it begins with collecting and analysis of quantitative data that primarily respond to the research question. Following this first stage, qualitative data are collected and analyzed with the aim of elaborating the results of the first stage (Creswell and Clark, 2014).

2.1. Data Collection Tool

A survey form, consisting of eight statements, was prepared by the researchers in order to find an answer to the following question: ''What are the opinions of the students about the use of Kahoot and CRS in classroom activities?". In the survey preparation process, an item-pool with 12 questions was created by reviewing the literature; after the opinions of experts were elicited, the number of items to be included in the form was reduced to eight and the survey was finalized. Quantitative data were obtained through Likert-type options, as follows; "Strongly Disagree", Disagree", "Neither agree nor disagree", "Agree", "Strongly Agree". In order to detail the findings from the quantitative data, the opinions of the participants were also asked about the same statements. The quantitative data obtained were listed based on their frequency and percentage values; the qualitative data were encoded based on the concepts and a content analysis was conducted.

2.2. Study Group

The participants consisted of 53 sophomore students studying at a Computer Education and Instructional Technologies Department of a public university during the 2016–2017 spring semester. All participants were informed in detail about the nature and objective of the study before the research and all the participants participated actively through online and face-to-

face activities. While 32 participants (60.3%) were female students, 21 (39.7%) were male. Participation was entirely voluntary. The participants had no experience regarding flipped learning before this exercise.

3. FINDINGS

At the end of the nine-week implementation period, students' views on the use of CRS were gathered within in-class activities of the flipped learning and the findings were tabulated and presented below.

Findings regarding the item “Kahoot can be used within any course’’ are presented in Table 1.

Table 1.
Quantitative findings regarding the item “Kahoot can be used within any course’’

Opinion	**n**	**%**
Strongly disagree	4	7,5
Disagree	0	0,0
Neither agree nor disagree	0	0,0
Agree	10	18,9
Strongly agree	39	73,6
Total	53	100

When Table 1 is examined, by combining the "Strongly Agree" and "Agree" responses together, it is determined that a high percentage of students (92.5%) expressed the opinion that Kahoot can be used within any course. However, four students stated that they strongly disagree with this item. The students were also asked about their opinions regarding the item "Kahoot can be used within any course". Analysis of qualitative data revealed that students held this view because they consider Kahoot is enjoyable (n=18), instructive (n=10), increases interest in class (n=5), enables the use and the recall of prior knowledge (n=4) and is similar to test technique (n=2).

Below are sample excerpts from student responses:

STD8: "It is a nice competition-like practice that encourages solving tests. Therefore, the use of Kahoot in a part of the course will be very useful for students."

STD14: "Being enjoyable, practical and instructive, Kahoot can be a platform that any student can use for his/her departmental purposes. I think Kahoot strengthens students' development through different question styles."

Findings regarding the item “I request that introduction to lessons should be made with a Kahoot activity" are presented in Table 2.

Table 2.
Quantitative findings regarding the item “I request that introduction to lessons should be made with a Kahoot activity’’

Opinion	**n**	**%**
Strongly disagree	3	5,7
Disagree	1	1,9
Neither agree nor disagree	3	5,7
Agree	5	9,4
Strongly agree	41	77,3
Total	53	100

Table 2 shows that 46 students (86.8%) wants lessons to be started with a Kahoot activity. On the other hand, only four students disagree with this view and three students decided to remain neutral. Qualitative data analysis of the student opinions indicates that they request introduction of lessons with a Kahoot activity as it allows for an enjoyable start to the class (n=18), increases student motivation (n=14) and supplies background knowledge on a topic to be studied (n=5).

Sample student opinions are as follows:

STD10: "If the lessons are introduced through Kahoot activities, some definitions can be learnt more easily and effectively before beginning the class."

STD14: "I think Kahoot activity is a fun way to start the lesson. Therefore, I am of the opinion that it increases the concentration in the classroom."

Quantitative findings about the item “I consider Kahoot activities as a waste of class time” are shown in Table 3.

Table 3.
Quantitative findings regarding the item "I consider Kahoot activities as a waste of class time''

Opinion	**n**	**%**
Strongly disagree	44	83,1
Disagree	0	0,0
Neither agree nor disagree	0	0,0
Agree	4	7,5
Strongly agree	5	9,4
Total	53	100

Table 3 highlights that whereas the majority of the students (83%) do not consider Kahoot activities as a loss of class time, nine students agreed that Kahoot led to a loss of time in the classroom. Students were also asked what they thought about the statement "I consider Kahoot activities as a waste of class time". Qualitative findings suggest that 17 students found Kahoot beneficial and 7 students found it a student-centered practice. In addition, six students indicated that Kahoot activities helped to improve learning retention. Findings also revealed that five students pointed out that the questions in the Kahoot activities should be prepared in accordance with the learning subject. Furthermore, three students emphasized that the time spent in Kahoot activities was the most efficient part of the lesson.

Sample student statements are given below:

STD40: "I disagree. Kahoot should be used because I think that it is not a waste of time and it ensures students' concentration in the lessons and increases their attention."

STD25: "If we are to think that the questions and performed competitions are related to the lessons, Kahoot is certainly a very useful exercise for the class."

Findings regarding the item "I would like to use Kahoot or similar systems in my teaching experience'' are given in Table 4.

Table 4.
Quantitative findings regarding the item "I would like to use Kahoot or similar systems in my teaching experience''

Opinion	**n**	**%**
Strongly disagree	3	5,7
Disagree	1	1,9
Neither agree nor disagree	1	1,9
Agree	5	9,4
Strongly agree	43	81,1
Total	53	100

As shown in Table 4, 48 students (90.5%) reported that they would like to use Kahoot or similar CRS when they start their teaching profession. However, while one student preferred to stay neutral, four students disagree with such opinion. In addition, three themes emerged from the students' opinions about the reasons as to why they want to use Kahoot in their future teaching practices. Students would like to integrate Kahoot or its alternatives into their classroom because they think these systems can facilitate transforming classroom into a fun learning environment (n=19), are beneficial for students (n=10) and are an effective way to direct students' attention to the subject matter (n=8).

Below are the sample student opinions regarding the item:

STD15: "The fun and informative use of Kahoot is a factor that will enable students to enjoy and concentrate on the course. That's why I consider using Kahoot and its kinds."

STD-21: "I can attract students' interest using Kahoot at the beginning of the lesson. I can use Kahoot to focus students on the lesson."

Findings regarding the item "During Kahoot activities, my interaction with other participants' increases" are presented in Table 5.

Table 5.
Quantitative findings regarding the item "During Kahoot activities, my interaction with other participants' increases"

Opinion	n	%
Strongly disagree	5	9,4
Disagree	1	1,9
Neither agree nor disagree	9	17,0
Agree	10	18,9
Strongly agree	28	52,8
Total	53	100

Results in Table 5 indicate that whereas 38 students (71.7%) considered Kahoot as a system that increases their interaction with other participants, six students (11.3%) opposed this view and nine students (17%) remained unclear at this point. Moreover, student opinions about the statement "During Kahoot activities, my interaction with other participants' increases" were qualitatively analyzed. 18 students stated that the elements of friendly and playful competition built into the Kahoot activities facilitate interaction among students. Students also indicated that the level of their interaction is increased when correct answers are announced (n=10) and when the results regarding how many students choose each answer are shown in a graph on the white board (n=7). There were six students who thought they experienced no interaction with other participants during Kahoot activities.

Sample student opinions regarding this item are as follows:

STD10: "I think that the interaction has increased because answers and opinions of every student appear on a single screen."

STD43: "Since we are not subjected to examination rules during Kahoot activities, I freely interact with my friends. I believe that activities become more enjoyable this way."

Findings regarding the item; "I make an effort to rise in the ranking" are presented in Table 6.

Table 6.
Quantitative findings regarding the item "I make an effort to rise in the ranking"

Opinion	n	%
Strongly disagree	4	7,5
Disagree	1	1,9
Neither agree nor disagree	5	9,4
Agree	7	13,2
Strongly agree	36	68,0
Total	53	100

Table 6 shows that 43 students (81.1%) tried to go up in the ranking during Kahoot. On the other hand, only five students disagree with this view and five students decided to remain neutral. The students were also asked about their opinions regarding the item "I make an effort to rise in the ranking ". Analysis of qualitative data showed that they are ambitious (n=17), they like competition feeling (n=11), they would like to see their names on the screen (n=10) and four students stated that they took part in this exercise only in order to measure their level of knowledge.

Sample student statements are given below:

STD-25: "All of the students would like to take part in the first five students appearing on the screen. Thus, we would like to answer all questions quickly and correctly."

STD-30: "I make an effort for the titles that I am interested."

Findings regarding the item; "I'm learning new things with Kahoot" are presented in Table 7.

Table 7.
Quantitative findings regarding the item "I'm learning new things with Kahoot"

Opinion	n	%
Strongly disagree	5	9,4
Disagree	0	0,0
Neither agree nor disagree	1	1,9
Agree	9	17,0
Strongly agree	38	71,7
Total	53	100

As shown in Table 7, 47 students (88.7%) reported that they have learned new things during the Kahoot. However, while one student preferred to stay neutral, five students disagree with such opinion. In addition, three themes emerged from the students' opinions about the reasons as to how they are (not) learning new things during the Kahoot. They thought that Kahoot provided deep learning (n=19) and it provided new learnings but for a short time (n=13). While 4 students stated that they have fun but they fail to learn.

Below are the sample student opinions regarding the item:

STD-21:"Even if I answer a question incorrectly, I see the correct answer on the screen and learn about my mistake."

STD-18: "The information which we use after learning on Kahoot, become permanent."

Findings regarding the item; "Kahoot changes my attitude towards the course positively" are presented in Table 8.

Table 8.
Quantitative findings regarding the item "I'm learning new things with Kahoot"

Opinion	n	%
Strongly disagree	5	9,4
Disagree	0	0,0
Neither agree nor disagree	1	1,9
Agree	9	17,0
Strongly agree	38	71,7
Total	53	100

Results in Table 8 indicate that whereas 46 students (86,8%) considered Kahoot changes his/her attitude towards the lesson positively, four students (7,3%) opposed this view and three students (5,7%) remained unclear at this point. Moreover, student opinions about the statement "Kahoot changes my attitude towards the course positively" were qualitatively analyzed. 29 students stated that their interest towards the course has increased with Kahoot. Students also indicated that Kahoot had an impact on the fact that they like the course (n=12). There were five students who thought the use of CRS had no impact on their opinion about the course.

Sample student opinions regarding this item are as follows:

STD-8: "It changes my thoughts towards the course positively as it is both a informative and funny activity."

STD-15: "Kahoot has an active role in my concentration on the lesson and about my thoughts about the course, it affects my thoughts positively."

4. DISCUSSION AND RESULTS

Flipped learning is a blended learning approach, consisting of two dimensions, in-class and online. In the first step, the students study on the learning materials in the online environment and participate in face-to-face activities as the second step. Teachers who design their courses based on flipped learning; they can use videos, presentations, pdfs, graphics and simulations in online environment. But the activities they will use in the classroom vary according to the context of the course. In-class activities may even vary based on the grade level or the subject of the week.

However, online assessment tools, such as CRS, can be used by all teachers who adopt the flipped learning as classroom activities. The use of CRS can be considered independent of the subject type and subject context. In this respect, it is important to examine the student views on the use of CRS in the flipped learning.

When the findings were examined, it was reported that Kahoot and other CRS could be used within each course and starting the course with CRS increased motivation. These results are in parallel with the results of the study conducted by Underdal

and Sunde (2014) and Wood, Teräs and Reiners (2013). Students stated that they did not see the use of CRS as a stolen time period in the course. They wanted to rise on leaderboard because they like to compete and they learned new things permanently or short term with Kahoot. Students also stated that their opinions changed positively towards the course because of Kahoot activities.

As a result, participants reported positive opinions about CRS use as in-class activity in flipped learning more than negative. They had both fun and learning by using CRS in their course. Therefore, teachers may be advised to use CRS when deciding on classroom activities in flipped learning. In this way, the level of knowledge can be checked when students come to class with the learning conducted outside the classroom. Also students' motivation can be increased and their negative thoughts on the course can be reduced with the using CRS in flipped learning.

Research and Publication Ethics Statement

The authors hereby declare that they have not used any sources other than those listed in the references. The authors further declare that they have not submitted this article at any other journal for publication.

Contribution Rates of Authors to the Article

The authors equally contributed for the article.

Statement of Interest

The authors declare that there is no conflict of interest.

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