

ATTITUDE OF STUDENTS TOWARDS KAHOOT AS A GAME-BASED LEARNING APPROACH AT CAMPUSES IN ERNAKULAM DISTRICT

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ABSTRACT

The practice of game-based learning approach coupled with conventional learning approach would lead to an entertaining, fruitful and fresh experience. This study preferred Kahoot as a game-based learning approach in order to investigate the general attitude of students towards such technique. A total of 120, both male and female students enrolled in various courses were taken as samples from campuses in Ernakulam district of Kerala. The study has analysed students' attitude towards games, attitude towards Kahoot game-based learning tool and perception of students towards Kahoot application. Further, the relationship of demographic data with regard to students' attitude towards games as well as game-based learning approach were calculated. Electronically generated questionnaire was employed to collect primary data and analysed using Karl Pearson Correlation, Chi-Square and Crosstabulation in order to accomplish the goals of the study and proving hypothesis. Results at the end revealed, the attitude of students' was positive towards Kahoot as a game-based learning approach.

Keywords: *Games, Gamification, Game-based learning, Attitude, Kahoot*

1. INTRODUCTION

Today, the whole world is fighting with COVID-19 pandemic. It has lead to a drastic change in the field of education. COVID-19 outbreak has demanded shutdown of educational institutions. The crisis followed by lockdowns has resulted in relying upon online teaching platforms. Due to the pandemic, digital modes of imparting education has taken various forms such as online lectures, digital open books, conduct of online exams, teleconferencing and virtual interactions(Strielkowski, 2020). Recently, online learning has not only been considered as an alternative mode of pursuing studies for those who wish to

learn, but also used as supplement in order to enhance the effectiveness of traditional classroom mode of learning (Rizvi, Rienties, & Khoja, 2019). The main objective of education and technology blended learning techniques is to impart theoretical as well as practical knowledge and skills. In addition, class activities should be engaging and provide consistent feedback (Wood & Reefke, 2010). Engagement involves mainly two elements; behavioural engagement and emotional engagement (Skinner & Belmont, 1993). Engagement to a greater extent can be improved by integrating carefully designed class activities and active learning techniques. As a basic tool in teaching, the advantages of active learning can be exploited to a large degree by allocating a wide range of interesting and competitive tasks (Wood & Reefke, 2010). In this respect, Education and gamification have a strong connection. According to Deterding et.al. (2011) “Gamification refers to *the use of game design elements in non-game contexts*”. Gamification in the field of academics is gradually gaining attention and research papers in this area have shown an increasing trend (Hamari, Koivisto, & Sarsa, 2014).

Due to the COVID pandemic, teachers were instructed to adopt virtual teaching platforms and techniques across various countries (Abidah, Hidaayatullaah, Simamora, Fehabutar, & Mutakinati, 2020). In this context, the interest and adaptability of students with new technology blended pedagogy have utmost importance. It is important to explore and experience novel learning platforms. Games can be subsumed to increase the conceptual understanding of students (Wood & Reefke, 2010). In teaching, an online game-based application Kahoot could be used to change the learning atmosphere into an engaging and entertaining environment (Mansur & Fadhilawati, 2019). Kahoot is a free application, easy for the students to handle, and simple for the instructors to understand and execute (Plump & LaRosa, 2017). The educators can use it for three different purposes; creating quiz or begin discussion or forming surveys (Mansur & Fadhilawati, 2019). The use of Kahoot! is not new in education as tutors have already experimented with it before (Bicen & Kocakoyun, 2018), (Mansur & Fadhilawati, 2019), (Plump & LaRosa, 2017), (Robiyati, Muin, & Amalia, 2020). By offering immediate feedback, Kahoot helps students in conceptual understanding and self-understanding through further clarification during or after game (Plump & LaRosa, 2017)

To date, despite a rising number of researches on gamification in the field of education, very few research has been done on the attitude of students towards

game-based learning approach with special focus on Kahoot application. The present study has been conducted among college students studying different programmes from various campuses in Ernakulam district i.e., the commercial capital of Kerala.

2. BACKGROUND OF THE STUDY

Games has always been embraced by gamers of all ages. Games become fun and successful when it keeps the player engaging, motivating, habit-forming, assigning goals and freedom to fail option (O'Donovan, Gain, & Marais, 2013). Due to its successful implementation in varied domains such as medical field, business environment, social and lifestyle, gamification has gained a lot of attention (O'Donovan, Gain, & Marais, 2013). The inclusion of gamification is growing across multiple academic disciplines. In a number of contexts, such as School level, University level, Adult education, Military level training and Medical practice, digital form of game-based learning provide great assistance in the learning process (Whitton, 2012). The game components such as storyline and graphic elements, goals, rewards, points, progress bars, leaderboard and medals improve the participation, level of understanding, engagement and motivation among students (O'Donovan, Gain, & Marais, 2013). "Fun from games arises out of mastery. It arises out of comprehension. It is the act of solving puzzles that makes games fun. With games, learning is the drug" (Deterding, 2011).

As a game-based teaching methodology, a new game known as Kahoot is being utilized in online along with traditional method of teaching (Icard, 2014). Kahoot as a novice learning application provides an opportunity for students to learn both individually and collectively. Kahoot is a game based e-learning tool (Bicen & Kocakoyun, 2018) which can be integrated into traditional teaching pedagogy as a supplementation (Plump & LaRosa, 2017). According to (Bicen & Kocakoyun, 2018), incorporation of conventional teaching method with gamified methods will produce varying effects on various target individuals such as academicians, educational authorities and student community. Hence, it may also vary with different geographical locations.

It is interesting to note, youngsters who tend to spend more time on video games and social networking than involved with real life activities admit that they would like to be taught in real class environment rather than in a virtual class environment (Strielkowski, 2020). The general attitude of people towards a person or an object or concept may have the possibility to collide with changing situations. On the basis of above insights, the researchers would investigate the

attitude of students towards Kahoot as a game-based learning approach in this study.

3. OBJECTIVES OF THE STUDY

The main aim of this study is to scrutinize the general attitude of students towards the usage and acceptance of Kahoot as a game-based learning methodology. In addition, the demographic data and students' general perception towards Kahoot application would be analyzed.

Based on the literature review, following research objectives were formed:

- To investigate the relationship between students' attitude towards games and their attitude towards Kahoot as a game-based learning approach.
- To find out whether the gender difference have any association with students' attitude towards Kahoot as a game-based learning approach.
- To identify the perception of students towards Kahoot application.
- To analyse whether there is any association between students' course and their attitude towards Kahoot as a game-based learning approach.

Hypothesis – The following hypothesis were formulated in order to accomplish the objectives:

1. H₀: There is no relationship between students' attitude towards games and their attitude towards Kahoot gamified learning approach.
H₁: There is a relationship between students' attitude towards games and their attitude towards Kahoot gamified learning approach.
2. H₀: There is no significant association between gender of the respondents and their attitude towards Kahoot gamified learning approach.
H₁: There is a significant association between gender of the respondents and their attitude towards Kahoot gamified learning approach.
3. H₀: There is no association between course of the respondents and their attitude towards Kahoot as a gamified learning approach.
H₁: There is a significant association between course of the respondents and their attitude towards Kahoot as a gamified learning approach.

4. RESEARCH METHODOLOGY

The following sub-sections explain the type of research design followed, characteristics of the samples, sample size, procedure of conducting the study, sample design adopted, method of data collection and statistical techniques employed for analysis.

4.1 RESEARCH DESIGN

The descriptive research method was selected to describe the nature and status of existing situations. This approach was followed in order to gain a better and deeper understanding of the phenomenon and contributing to the existing theory.

4.2 POPULATION

The participants under this study were regular college students enrolled in technical and non-technical courses of undergraduate and post graduate programs. In this study, students from Integrated MCA and Engineering were considered under the category of technical course and students from MBA, BCom were taken for non-technical courses. The total number of respondents in the study constitute 120 of which 60 were males and 60 were females from the various colleges in Ernakulam district of Kerala. Under this study, gamified learning application Kahoot was selected to estimate the attitude of students towards game-based learning approach. In order to check the attitude, a Kahoot quiz game was prepared and introduced to students to play. To begin with, introduction of Kahoot application together with general instructions of gameplay has been sent to the participants via email. After that, the game was assigned to the students by sending the game connexion via email at pre-scheduled date and time. The participants were asked to complete the Google form followed by Kahoot! Game-Playing. At their comfort and convenience, participants finished the questionnaire online.

4.3 SAMPLE DESIGN

The cluster sampling technique was adopted to identify the participants. Based on the requirement of study three clusters was formed on the basis of geographical locations namely, corporation, municipality and panchayat. The participants under clusters are hetrogenous. Therefore, students were selected randomly from technical campuses, B-schools and Arts & Science colleges coming under each cluster.

4.4 DATA COLLECTION

Electronically generated self-administered questionnaire using Google forms had been employed for the purpose of data collection. In the absence of an invigilator, a self-administered questionnaire is filled out by participants, as the name implies. Self-administered questionnaire have the advantage of being distributed to more number of people easily, and anonymity of the respondents is allowed (Mitchell & Jolley, 2012). The questionnaire was circulated among the respondents by sharing the Google form link via Email. The statements for

measuring attitude and perception in the questionnaire has been adapted from previous research works of (Hainey, et al., 2013), (Martí-Parreño, Seguí-Mas, & Seguí-Mas, 2016) and (Bicen & Kocakoyun, 2018).

4.5 TOOLS FOR ANALYSIS

The information gathered was analysed quantitatively. Crosstabulation, Karl Pearsons' Correlation Coefficient and Chi-Square test were the statistical techniques used for the purpose of data analysis. Data collected from online platform was analysed using SPSS software. In this study, students attitude towards games, attitude towards Kahoot as a game-based learning approach and perception towards Kahoot application was obtained using five point Likert Scale with options Strongly Agree, Agree, Neutral, Disagree and Strongly disagree corresponding to each statement. The values were assigned to options in such a way that 5- Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1-Strongly Disagree for positive statements and reverse coding followed for negative statements. The nature of relationship between variables was tested using Correlation. Chi-Square was used to test the association between selected variables.

5. DATA ANALYSIS

5.1.1 GENERAL ATTITUDE OF STUDENTS TOWARDS GAMES AND KAHOOT AS GAME-BASED LEARNING APPROACH

The data shown in following table suggests the general attitude of selected 60 male and 60 female students towards games and Kahoot as a game-based learning approach. The data regarding attitude was obtained by means of five point Likert scale.

Table 1. Students' Attitude towards Games and Attitude towards Kahoot as a game-based learning approach

Variables	Gender	Negative Attitude (%)	Neutral Attitude (%)	Positive Attitude (%)	Total (%)
Attitude towards Games	Male	20.7	24.1	55.2	100
	Female	44.8	44.8	10.3	100
	Total	32.8	34.5	32.8	100
Attitude towards Kahoot as a game-based learning approach	Male	37.9	31.0	31.0	100
	Female	75.9	3.4	20.7	100
	Total	56.9	17.2	25.9	100

The data presented in the above table display the general attitude of both male and female students towards games and Kahoot game-based learning approach. With regard to students' attitude towards games, majority (34.5%) of the respondents had a neutral attitude and showed equal level (32.8%) of positive and negative attitude. While, the attitude of students towards Kahoot as a game-based

learning approach was found to be positive (56.9%) followed by 25% of negative attitude and 17.2% neutral attitude.

5.1.2 RELATIONSHIP BETWEEN STUDENTS' ATTITUDE TOWARDS GAMES AND THEIR ATTITUDE TOWARDS KAHOOT AS A GAME-BASED LEARNING APPROACH

The data provided in Table 2 shows relationship between two variables: students attitude towards games and their attitude towards kahoot as a game-based learning tool. In order to analyse the relationship, parametric test statistic Karl Pearson's coefficient of correlation was employed. The relationship between the variables was determined based on the 'r' value obtained. Based on the test result, hypothesis was also proved.

Table 2 Correlation between attitude towards games and attitude towards Kahoot as a game-based learning approach

Variables	Correlation (r)
<ul style="list-style-type: none"> ▪ Attitude towards Games & ▪ Attitude towards Kahoot as a game-based learning approach 	.673

Here in this study, Karl Pearson's coefficient of correlation indicate that students' attitude towards games and their attitude towards Kahoot as a game-based learning approach moves in the same direction, i.e., Positive. The relationship between the variables is positive as the value of 'r' value obtained is .673. Therefore, null hypothesis was rejected.

5.2 Association between Gender of students and their Attitude towards Kahoot as a game-based learning approach

The data regarding association between gender of students and their attitude towards Kahoot as a game-based learning approach is given in Table 3. In order to understand the association, the following two variables was analysed using non-parametric test statistic Chi-Square was used. Based on the *p*-value obtained, hypothesis was also proved.

Table 3. Chi-Square Test

Variables	Chi-Square value	P value
<ul style="list-style-type: none"> ▪ Gender ▪ Attitude of students towards kahoot as a game-based learning approach 	10.667	.005

The chi-square test display a *p*-value (.005) which is less than the standard alpha value of 0.05. Hence, the null hypothesis was rejected indicating that the two variables are dependent of each other. Therefore, there is a significant association

between the gender of the respondents and their attitude towards Kahoot game-based learning approach.

5.3 STUDENTS' PERCEPTION TOWARDS KAHOOT APPLICATION

The students' general perception regarding Kahoot game-based learning application is presented below in the Table 4. The data was collected from both male and female students using five point Likert scale. Crosstabulation between gender and students perception was done to identify the total perception, males perception and females perception separately.

Table 4 . Crosstabulation between Gender and Perception towards Kahoot

Gender	Perception towards Kahoot		
	Negative Perception(%)	Positive Perception(%)	Total(%)
Male	34.5	65.5	100.0
Female	62.1	37.9	100.0
Total	48.3	51.7	100.0

The students' perception in respect of Kahoot application reveal, 65.5% of the overall male respondents had a positive perception whereas 34.5% of them showed a negative perception. Although, the female respondents displayed different views. 62.1% of the overall female respondents had a negative perception and only 37.9% were positive towards Kahoot application. As a whole, the students had positive perception (51.7%) towards Kahoot application while, 48.3% of the total respondents had negative perception towards Kahoot.

5.4 ASSOCIATION BETWEEN COURSE OF THE STUDENTS AND ATTITUDE TOWARDS KAHOOT AS A GAME-BASED LEARNING APPROACH

In the Table 5, non-parametric test statistic Chi-Square was employed to identify whether the two variables .i.e., course of students and their attitude towards Kahoot as a game-based learning approach are dependent or independent of each other. The hypothesis was proved based on the *p*-value obtained.

Table 5. Chi-Square Test between course and attitude of students towards kahoot as a game-based learning approach

Variables	Chi-Square value	P value
<ul style="list-style-type: none"> ▪ Course of the students ▪ Attitude of students towards kahoot as a game-based learning approach 	3.681	.159

The chi-square test display a p -value (.159) which is greater than the standard alpha value of 0.05. Hence, the null hypothesis was accepted. Therefore, the two variables are independent of each other. It indicates, there is no significant association between the course of the students and their attitude towards Kahoot game-based learning approach.

6. RESEARCH FINDINGS AND DISCUSSION

The explanation of the outcomes of this study is discussed in this section in conjunction with each objective set, along with theoretical support.

6.1 RELATIONSHIP BETWEEN STUDENTS' ATTITUDE TOWARDS GAMES AND ATTITUDE TOWARDS KAHOOT:

Attitude can be explained as a persons' propensity to react either positively or negatively with regard to a situation or towards a person or an object or any concept (Mazana, Montero, & Casmir, 2019). Under this study, the majority of the total students' attitude towards games was neutral (34.5%) indicating neither Positive nor Negative. But, the remaining out of total students showed an equal level (32.8%) of positive and negative attitude towards games. Usually, the male students showed more (55.2%) optimistic attitude towards games than total female students. However, this finding confirm with the results of prior research works. In general, men have more optimistic attitude towards games than women (Hainey, et al., 2013). Similarly, boys usually seemed to be happy as regards technology, game designs and styles. In the study of (Bonanno & Kommers, 2008), male students disclosed highly positive attitude towards gaming behaviours whereas female students demonstrated a less positive and neutral attitude.

The respondents in this study were regular college students and it was found that the general attitude of students towards Kahoot as a game-based learning approach was found to be positive (56.9%) followed by 25% of negative attitude and 17.2% neutral attitude. It support the results of (Cheong, Filippou, & Cheong, 2014), (Bicen & Kocakoyun, 2018), (Bonanno & Kommers, 2008) that students developed favourable attitude towards gamified learning approach. Likewise, in the study of (Bicen & Kocakoyun, 2018), students' viewpoint in respect of gamified method of learning was interesting as it provides a competitive atmosphere to play and make the learning fun. Whereas, with the use of the same approach or technique in different geographical areas, attitude may have varying effects on different categories of people. The study conducted by (Hainey, et al., 2013) states that students in distance education program have slightly negative

attitude towards using gamification in education than regular students who holds positive attitude.

The analysis results reveal that students' attitude towards games and attitude towards Kahoot as a game-based learning approach have a positive relationship ($r = .673$). The correlation value indicates, if the respondents develop a positive attitude towards games, it would also lead to developing a positive attitude towards Kahoot game-based learning approach. The term attitude holds much relevance because it is an important indicator of the intention of a person to carry out the target behaviour (for instance, adopting gamified tools in education) (Martí-Parreño, Seguí-Mas, & Seguí-Mas, 2016). Attitude has the power to affect ones decisions and actions (Pickens, 2005).

6.2 ASSOCIATION BETWEEN GENDER AND KAHOOT AS A GAME-BASED LEARNING APPROACH:

The study revealed that there is a significant association between gender of the respondents and their attitude towards Kahoot game-based learning approach. It indicates, gender plays a vital role in influencing the students' attitude towards Kahoot as a game-based learning approach. When it comes to an education setting, gender difference have been displayed during game playing although both boys and girls showed equal engagement in a narrative, inquiry-based and multi-player game-based learning in a virtual space (Bressler & Bodzin, 2013).

6.3 STUDENTS' PERCEPTION TOWARDS KAHOOT APPLICATION:

The students' perception towards Kahoot as a gamified teaching method was positive and opined that it can be applied to all fields (Bicen & Kocakoyun, 2018). Another study (Robiyati, Muin, & Amalia, 2020) states that students found using Kahoot in the teaching learning process of phonology to be productive. Similarly, Kahoot application was found to be powerful as it had improved the vocabulary among English learning students (Mansur & Fadhilawati, 2019). In accordance with this, the present study also disclosed that majority (51.7%) of the total students had a positive perception towards Kahoot application followed by a negative perception of 48.3%. In particular, male students revealed slightly higher positive perception (65.5%) than total female participants (37.9%).

6.4 ASSOCIATION BETWEEN COURSE AND STUDENTS' ATTITUDE TOWARDS KAHOOT:

It was found that there is no significant association between the course of the students and their attitude towards Kahoot game-based learning approach. Therefore, a student from technical and non-technical course background would

have no varying attitude towards Kahoot game-based application as a learning tool.

7. CONCLUSION

The notion of game-based learning has arisen as a paradigm for generating beneficial and exciting results in academic sector. Games would be attractive and fun for gamers of all ages. Nevertheless, inclusion of game elements in education or introduction of game-based learning approaches without considering students' perspective may result in unintended consequences. In this regard, it is of profound significance to understand students' attitude towards novel learning instruments and methods. This study has preferred Kahoot as a game-based learning approach to investigate the students' attitude towards it and data was gathered from regular college students within the Ernakulam district of Kerala. It was found that the attitude of students with regard to Kahoot as a game-based learning approach was positive. Therefore, the probability of success in implementing such learning methods within Ernakulam district is high. However, this study has not examined the factors influencing students attitude towards Kahoot game-based learning tool. In addition, the general perception of students towards Kahoot application was found to be positive. The future studies can be done by comparing student engagement and satisfaction with Kahoot between school level and college level students. Apart from this the study revealed, gender has an influential role in students' attitude towards Kahoot as a game-based learning approach. Furthermore, no significant association has been established between course of the students and their attitude towards Kahoot as a game-based learning approach. In short, gamified educational practices if integrated with conventional teaching methods could expect revolutionary reforms in the academic domain.

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Appendix

QUESTIONNAIRE**ATTITUDE OF STUDENTS TOWARDS KAHOOT AS A GAMIFIED LEARNING APPROACH AT CAMPUSES IN ERNAKULAM DISTRICT****I. DEMOGRAPHIC DETAILS**1. Gender: Male Female 2. Course: Technical Non-technical **II. ATTITUDE MEASUREMENT**a) Attitude towards Games

Please select appropriate options for each statement. (SA-Strongly agree, A- Agree, N- Neutral, D- Disagree, SD- Strongly disagree)

Particulars	SA	A	N	D	SD
1. Playing games is enjoyable					
2. Playing games is interesting					
3. Playing games is exciting					
4. Playing games is time consuming					
5. Playing games is a sociable activity					
6. Playing games is a worthwhile activity					
7. Playing games helps to develop useful skills					
8. Playing games is a valuable activity					
9. Playing games is a lonely activity					
10. Playing games is a waste of time					

b) Attitude towards gamified learning approach

Please select appropriate options for each statement. (SA-Strongly agree, A- Agree, N- Neutral, D- Disagree, SD- Strongly disagree)

Particulars	SA	A	N	D	SD
1. I find gamified learning approach a good idea					
2. My attitude towards gamified learning approach is positive					
3. My attitude towards gamified learning approach is favorable					

III. STUDENT PERCEPTION TOWARDS KAHOOT APPLICATION

Please select appropriate options for each statement. (SA-Strongly agree, A- Agree, N- Neutral, D- Disagree, SD- Strongly disagree)

Particulars	SA	A	N	D	SD
1. Password access of the application is easy to navigate					
2. Nickname access of the application is easy to navigate					

3. The application can be easily used on all platforms					
4. The time display of the activities in the application facilitates time management					
5. Activity results in the application can easily be shared					
6. Using the application through mobile devices is easy					
7. Activities may easily be created in the application					
8. Answers in the application can be easily given on smart phones					
9. Projecting the application on a board facilitates answering					
10. The design of Kahoot is simple and useful					