

Kahoot as an Assessment Tools: Students' Perception of Game-based Learning Platform

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Abstract

This study aims to determine students' perception of game-based learning platform as a learning evaluation medium. The approach used in this research is descriptive quantitative, and qualitative—the instrument used in the form of a questionnaire containing 22 questions and interviews. The research was conducted in two analytical chemistry classes at a public university in Indonesia. Researchers used Kahoot every two weeks over four months as a tool for formative assessment. Three students from each class were interviewed to explore their experiences and perceptions of Kahoot. Questionnaire data were processed using descriptive statistics, while data from interviews were analyzed using thematic analysis. The findings show that chemistry education students' perception of game-based learning platform as a learning evaluation medium is quite good. Students also perceived that Kahoot provided a challenge in learning. Kahoot is also a fun and exciting assessment medium for students. In addition, students feel that their learning motivation has increased in preparing the material to be tested, so direct feedback from Kahoot is very effective in correcting mistakes.

Keywords: Perception, Evaluation, Game-based Learning Platform, Kahoot.

INTRODUCTION

The development of information technology today provides various conveniences for every individual in carrying out daily activities, including education. According to Simarmata (2010: 47), the internet collects millions of computers used to obtain all forms of information, both sending and receiving from other computers.

The survey shows that the penetration of student internet users in Indonesia is 92.6% (APJII, 2018). The use of the internet is still not maximally used by students in supporting their education. As in a survey which shows that only 9.6% of the internet is used to help schools or lectures, this is still very low compared to the use of the internet for social media of 18.9%, chat applications 24.7%, looking for information related to work 11.5%, and the others are used to fill spare time 6.5%, playing online games 5.7%, looking for news in online media 5.5%, watching movies and videos 5%, and others by 22.6 % (APJII, 2018). These data indicate that the use of the internet is still low, which is used in education for the learning process.

Likewise, in the field, teachers and lecturers are still very limited in using technology in the classroom due to lack of facilities such as weak internet connections (Bicen & Kocakoyun,

2017), as well as lack of expertise and understanding in using technology media and doubts about the ability to use technology (Bicen & Kocakoyun, 2017), Becker, 2007). According to the results of the PUSTEKKOM survey, only 40% of teachers are ready with technology (Antara, 2018), so lecturers are still very limited in using technology.

The world of education must constantly adapt technological developments to efforts to improve the quality of education, especially adjustments to the use of information and communication technology. Increasing the quality of education cannot be separated from the role of universities as one of the implementers of educational goals. It is also supported by the learning process in class and outside the classroom. Therefore, to support the learning process, universities need to carry out and implement innovations and breakthroughs based on science and technology that involve lecturers in it.

The success of students in learning is seen through the assessment of their learning outcomes. Assessment is an essential component in the implementation of education. Efforts to improve the quality of education can be pursued by improving the quality of learning and the quality of the assessment system. Assessment is a systematic and continuous activity to collect, analyze,

and interpret information about the teaching and learning process and achieve learning objectives. As a systematic process, assessment must be carried out in a planned and gradual manner to obtain an overview of student development. Meanwhile, assessment must be carried out continuously during the learning period (Muskin, 2017). Assessment plays a significant role in improving the quality of learning.

In general, there are two types of assessment in the learning process, namely summative and formative assessment (Dixson and Worrel, 2016). Both summative and formative exams are used to make assumptions about a student's learning (Black and William, 2018). Summative assessment is usually carried out after all subject matter has been taught. This assessment is in the form of numbers or letters used as a result of student learning (Kibble, 2017). Summative assessment is designed to record students' overall achievement systematically. The purpose of summative assessment is to sign to students that they have participated in a program and determine the position of students' abilities compared to their friends in the class.

Formative assessment is defined as a process in which teachers and students respond to student work by making judgments about what constitutes

effective learning in order to improve that learning (Pryor and Crossouard, 2008). Formative assessments have been shown to be an effective tool for motivating pupils to study and increasing their awareness of their own learning (Weurlander et al, 2012). Moreover, Bould et al (2016) reveal that Formative assessment, according to the practice perspective, is not an act in and of itself, but rather a component of a larger context of educational practices.

The use of formative assessment is increasingly emphasized in the world of education. In order to improve student learning on a subject matter, formative assessment should be seen as an essential element to facilitate the learning process (Bennett, 2011, Furtak and Ruiz-Primo, 2008). Therefore, formative assessment feedback must be adequately designed to improve students' understanding of the material that has been learned. Formative assessment to evaluate student progress can be recognized; one of them is by taking quizzes in class. Quizzes are short answer and multiple-choice format with unit tests and exams in multiple-choice format. Improved performance is seen with quizzes versus supplementary reading (Iwamoto et al., 2017). A quiz is a form of formative assessment used to determine how high the level of students' understanding of the learning that has been carried out at that time. Quizzes are

also a tool for students to build their confidence (Dellos, 2015). It helps in the effectiveness of learning in the classroom, and the teacher can assess students' performance during the learning process (Holbrey, 2020, Jones et al. 2019, Owen and Licorish 2020).

Nowadays, in the midst of the rapid development of information technology, teachers are beginning to authorize the use of technology as a tool for formative assessment. One of technologies integrated in the classroom as a formative assessment tool is a games based learning platform such as Kahoot (Ramli, Yohana, & Islami, 2018, Licorish et al 2018, Bicen and Kocakoyun, 2018). Kahoot is a free game-based learning platform that engages students through games in form of quizzes created by lecturers or teachers.

Many educators have implemented gamification in teaching and learning. Gamification of education has the potential to increase student engagement, enhance certain abilities, and optimize learning (Smiderle et al, 2020, Khaleel et al, 2020 and Dichev and Dicheva, 2017) A number of studies have investigated the gamification of learning using Kahoot! (e.g Kirew, 2014, Boden and Hart, 2018, Cameron and Bizo, 2019, 2020, Holbrey 2020, Moore 2019, Donkin and Rasmussen, 2021, and Kim

2021) Kirew (2014) Research at the Norwegian University of Science and Technology (NTNU) in 2013 found that students who participated in various game-based quizzes using Kahoot in class showed 22% learned more than students who worked on paper quizzes and 25% of students who used Kahoot more motivated compared to paper quizzes. Whereas the research of Iwamoto, Hargis, Taitano, & Vuong (2017) shows that using Kahoot has an influence in creating a pleasant and interesting environment so that it motivates academic performance and the results have a significant influence on test scores.

Ismail & Mohammad (2017) suggest that Kahoot is a promising tools to make students more focused in learning and can adjust various learning styles. They used quantitative approach by delivering questionnaires on students' experience using Kahoot to 113 students with satisfactory results. The findings of this study are consistent with those of Wang & Lieberoth (2016) who point out that using audio and visual in Kahoot has a large impact on class dynamics in terms of interaction, response, enthusiasm, and more interactive environment.

The purpose of this study was to explore the experience of chemistry education students' perceptions on using game-based learning platform

commonly called Kahoot as an assessment tool.

METHOD

The method employ in this research is mixed method approach. The method of this research is mix methods. Mixed method is a research method that combines quantitative research methods and qualitative methods to be used simultaneously, so that more comprehensive, valid, reliable, and objective data will be obtained (Sugiyono, 2011). The main purpose of using mix method is to find better results than just using one approach. According to characteristics combination mix methods, the first step is quantitative methods and the next is qualitative methods. Mixing the two methods is to be a link between the results of the first research and the next.

The research was conducted at a public university in Indonesia. The subjects of this study were year 2 chemistry education students. This research was conducted in two analytical chemistry classes. The instrument that used for collecting quantitative data was a questionnaire containing 22 questions, meanwhile interview was employed to gather qualitative data. The main purpose of using a questionnaire is to obtain information from respondents about their personalities or things they know about perceptions of game-based learning

platform as a learning evaluation medium (Arikunto, 2013). The researchers using Kahoot every two weeks over four month period as a tool for formative assessment. At the end of the lecture period students were given a questionnaire to fill out their experiences and perceptions during the lecture using Kahoot online platform as an evaluation tool for their learning.

The questionnaire used is a questionnaire adapted from the questionnaire on the use of kahoot in higher education by Ismal M.A & Mohammad J.A (2017) and Ai Lin et al (2018). Researchers looked at two aspects, namely the benefits of kahoot and learning engagement with a total of 22 questions. Then three students from each class were selected with a purposive sampling technique to be interviewed about their perceptions and to explore experiences about Kahoot. The interview used is a semistructured interview with 10 main questions such as "how do you feel when using Kahoot?, how do you feel about using kahoot in learning? What are the obstacles you face when using Kahoot?". Responses from participants were then explored more deeply with follow-up questions. Questionnaire data were processed using simple descriptive statistics while data from interviews were analyzed using thematic analysis. The thematic analysis

methods applied in this study were developed by Braun and Clarke. Thematic analysis of steps applied is data recognition, initial coding, searching for themes, reviewing themes, determining and naming themes and writing reports (Braun & Clarke, 2006).

RESULTS AND DISCUSSION

To achieve the objectives of this study, exploring the experience of chemistry education students' perceptions on using game-based learning platform commonly called Kahoot as an assessment tool, the researchers used an adapted questionnaire consisting of 22 questions to determine two aspects, namely the benefits of kahoot and student engagement. For the aspect of Benefit of Kahoot, there are 4 sub-aspects investigated, namely the focus, motivation, feedback and understanding. Meanwhile, for the student engagement aspect, there are 5 sub-aspects investigated, namely challenge, control, in depth engagement, interest, purpose. Among the items of the instrument are; *Kahoot helps me to focus on the subjects; Kahoot motivates me to learn more; Learning with Kahoot is fun ;I am more engaged with feedback through Kahoot.*

Meanwhile, to collect interview data, the researcher developed an interview guide. The data were analyzed using thematic analysis and at the time of coding the researchers used a priori codes. A priori codes are codes developed by researchers before analyzing the data and are usually taken from the literature. In this study, among the a priori codes used were the sub-aspects investigated such as student engagement, students understanding, feedback, motivation, purpose and interest.

The benefits of using Kahoot in learning

The use of Kahoot in the learning process is not only beneficial for students but also can provide benefits for teachers to develop learning with different and varied methods from before, so that the learning process that occurs in the classroom does not tend to be monotonous and can provide a different experience for students.

The questionnaire obtained by students regarding the aspects of the benefits of Kahoot by involving the sub-aspects of focus, motivation, feedback, and understanding, the average for each sub-aspect is 3.89; 4.24; 4.13, and 3.69. More complete data can be seen in Table 1.

Table 1 Average value of the Student Perception Questionnaire on the Benefits of using Kahoot in learning (n=53)

Sub Aspects	SD %	D %	N %	A %	SA %	Average Value (max score = 5)	Category
Focus	1.89	5.66	13.21	60.38	18.87	3.89	Good
Motivation	0.00	1.89	5.66	58.49	33.96	4.24	Excellent
Feedback	0.00	0.00	18.87	49.06	32.08	4.13	Good
Understanding	1.89	6.13	28.77	47.64	15.57	3.69	Good

Note: SD : Strongly Disagree D : Disagree N: Neutral A : Agree SA Strongly Agree

1. Focus

The average result obtained in the focus sub-aspect is 3.89, which is included in the excellent category. It shows that Kahoot can help students focus on lectures. Students feel that the analytical chemistry two learning process can increase the enthusiasm for learning so that the focus obtained in understanding the material and lecturer explanations is also maximal.

“Yes, Kahoot helps in focusing on learning. The impact is quite high because it guides us too....learning can be focus” (student #1)

It is related to the theory explained by Ismail & Mohammad (2017) that Kahoot can make students more focused on learning and adapt to different learning styles.

2. Motivation

Overall, students can be motivated by Kahoot to study harder to understand each material being taught to get better formative grades. The results of the quantitative analysis on the average of the motivational sub-aspect questionnaires are 4.24. This value is included in the outstanding category. Students feel their learning motivation has increased in preparing the material to be tested on the Kahoot quiz before the start of the lecture because, in each question, there are points given so that students can answer questions quickly and accurately to get the best grades and top positions in the class, as shown below this.

“I am motivated to learn, especially materials that are computational in nature.....I really

have to learn to be able to answer the questions on time" (student #2)

In line with research by Al-hadithy & Ali (2018), it is revealed that learning using Kahoot has the potential to be more motivating for millennial students.

3. Feedback

The results obtained of 4.13, which is included in the good category. It shows that direct feedback is precious in learning. One form of digital feedback from Kahoot to students is showing the correct answers and quiz scores directly. If students are given regular feedback on their performance, it will close the gap between what they know and what they want.

"Right, every single question there must be an immediate correct answer, so when you know the answer, it's like making the next question even more excited to find the right answer..." (Student #6)

In line with Ningrum's research (2018), Kahoot can accelerate students' understanding of the material taught because it provides direct feedback to further re-establish material that they feel they lack understanding.

4. Understanding

The results show an average of 3.69 with good categories. This sub-

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aspect of improving understanding gets a lower percentage than other sub-aspects. Kahoot only helps facilitate evaluation by understanding the material so that it is easier for students to face future exams. According to Iwamoto et al. (2017), Kahoot can increase test scores at the college level. Meanwhile, increasing understanding depends on the individual himself, whether the individual can be motivated by this Kahoot.

"In my opinion, it's not enough to help improve understanding because Kahoot is for evaluation, so it means that Kahoot is a quiz in analytical chemistry 2, so at least it's like a quiz" (student #6)

According to Clark & Mayer (2008), the benefits derived from the use of new technology will depend on the extent to which it is used in a way that is compatible with the existing learning process.

The effect of using Kahoot on student learning engagement

According to Graham (2015), game-based learning involves using games and game principles in the classroom to engage students and enhance learning. The Effect of using Kahoot on learning engagement is divided into several sub-aspects: challenge, control, in depth engagement, interest, and purpose.

Then for aspects of learning engagement with sub-aspects of

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challenge, control, deep involvement, interest, and goals, the average for each sub-aspect is 4.47; 4.32; 4.04; 3.95, and

3.8. More complete data can be seen in Table 2.

Table 1 The average value of the student perception questionnaire on the effect of using Kahoot on student learning engagement (n=53)

Sub Aspects	SD %	D %	N %	A %	SA %	Average Value (scale 1-5)	Category
Challenge	0.00	0.00	13.21	26.42	60.38	4,47	Excellent
Control	0.00	0.00	7.55	52.83	39.62	4,32	Excellent
Immersion	0.47	4.25	16.51	48.11	30.66	4,04	Good
Interest	1.89	3.77	19.81	45.75	28.77	3,95	Good
Purpose	1.13	3.77	25.66	52.45	16.98	3,8	Good

Note: SD: Strongly Disagree D : Disagree N: Netral A: Agree SA : Strongly Agree

1. Challenge

The results of quantitative analysis showed a figure of an average of 4.47 included in excellent category. Students feel that themselves challenged in learning due to Kahoot quiz. Kahoot platform gives a new reference to learning activities in the classroom.

"Yes, what I feel is quite challenged because I have to be fastest so fast and right not only fast but also right in answering any questions at Kahoot. What is even more challenging is because there is something unique about Kahoot, who gets the highest score in the top three, isn't it just like the competition, so there is a competitive spirit, so I want to answer correctly, I want to have a big value, it's quite challenging " (student #1)

From all of this, the aim is to make students study harder and understand better. It is in line with the results of Licorish et al. (2017) that Kahoot is a unique college experience, fun and stimulating to learn; compared to other lectures, Kahoot is more challenging and highly anticipated. They believe that Kahoot is a good alternative for formative assessment tool, however it cannot be implemented in all the topics covered in the chemistry classroom (Ramli, Yohana, & Islami, 2018).

2. Control

Data obtained shows the Effect of Kahoot on the control sub-aspect with an average of 4.32. This value is included in the very good category. Students must be able to control themselves to always focus on items or questions in each Kahoot session to get maximum results. Self-control is essential by relying on the

fingers' speed and must be harmonized with quick thinking analysis. Being careless for just a moment can cause to lose points, such as the following respondent's responses:

"In Kahoot, we have to be more focused and faster in solving problems because time being pursued is also different from other quizzes" (student #3)

Students feel an enjoyable competition because each student tries to be at the top of the Kahoot ranking. Licorish et al. (2017) revealed that when engaged, students showed interest in learning content, students tried to control themselves, and paid more attention to always maintaining focus during class learning.

3. In Depth Engagement

The results showed an average value of 4.04, which was included in the excellent category. Student engagement in the classroom is like a discussion between one student and another about what answers will be answered in each question so that the atmosphere created in the classroom is quite crowded. students in the class is like a discussion between one student and another about what answers will be answered in each question so that the atmosphere created in the classroom is quite crowded.

"Yes, because there is competition so we are competing with each

other to learn, then we also become like learning together, create a learning forum again, continue to exchange information so we get involved with each other in the classroom" (student #4)

The response above is in line with Chaiyo & Ranchana (2017) which revealed that Kahoot enhances student interaction and activity, which helps students to be active in class and have collaborative learning, which also increases student engagement in the learning process.

4. Interest

The results showed an average value of 3.95, which was included in the good category. Kahoot makes courses that use Kahoot highly awaited by students

"First of all, I'm happy like I ask for a quiz because it's more interesting and we are also more focused because we don't want to have to be forced in that time we have to answer right and keep fast" (student #3)

Results on this sub aspects is support the Iwamoto et al. (2017) study which find that students look forward to the learning process in the classroom because they enjoy the Kahoot game.

5. Purpose

The results show an average value of 3.8, which is included in

good category. Clear and directed learning objectives will make it easier for students to understand the material, and the results will produce good learning outcomes.

"Yes, Kahoot helps, because the presentation is interesting and different from the others, so when we are interested in Kahoot and the quizzes in Kahoot, indirectly we also have prepared supplies or materials before the Kahoot quiz, so it is like in learning we become more I am excited to learn again, I think it is like that." (student#6)

The finding shows that Kahoot motivate students to prepare themselves on lesson quizzes. So, they learn before the lessons, as a result their got better attainment. This is in line with Wichdales & Pattanapichet (2018) which reveal that Kahoot yields more achievements.

Kahoot is suitable as an assessment tool. It can change the learning atmosphere to be more active than not using Kahoot. This platform encourages students to study harder. This is in line with previous studies such as Zarzycka's research (2016) which shows that although the material may be difficult, students seem open and want to learn through the usage of Kahoot because learning using Kahoot is better than monotonous traditional learning.

The above findings also show that Kahoot can be used in colleges. Students in the classroom take part in conducting this Kahoot quiz, students feel a different experience from previous quizzes with a positive response. Students feel there are valuable lessons in using Kahoot for teaching and learning purposes. Usually, students only attend class to fulfill their lectures, but now there is another enthusiasm to get a high score during kahoot. So this motivates them to learn, understand the material and achieve lecture goals.

CONCLUSION

Student perceptions of game-based learning as a medium for evaluation of learning as a whole are in the good category with a total average score of 4.17. Students feel their learning motivation increases in preparing the material to be tested, so direct feedback from Kahoot is very effective in correcting mistakes. Then student learning outcomes are strongly influenced by student learning involvement. Then the students revealed that Kahoot provided a challenge in learning. Kahoot is also a fun assessment medium that attracts students. Based on the results of this study, the researcher has several suggestions: (1) This research provides space for other researchers to research other subjects that are not too complex; (2) This research should be

conducted in a place that supports internet connection well or done where wifi is available; (3) This research can also be used as a reference in further research to explore other potentials of Kahoot related to students' social skills and critical thinking.

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