



The Utilization of MOOCs using Kahoot and Student Engagement in Digital Learning During Covid-19 Pandemics

Rakhmat Wahyudin Sagala¹ & Tri Indah Rezeki²

¹Universitas Muhammadiyah Sumatera Utara, Indonesia & ²STKIP Budidaya Binjai, Indonesia

ARTICLE INFO

Article history:

Received October 15, 2021

Revised Dec 16, 2021

Accepted Jan 25, 2022

Keywords:

Massive Open Online Courses,
Kahoot,
Student Engagement,
Learning Difficulties,
Digital Learning,
Covid-19 Pandemics

Conflict of Interest:

None

Funding:

None

ABSTRACT

New technology advancements have frequently been credited as holding the potential to cause significant contributions to education. This study contributes to high-quality learning by putting students in real-world e-learning situations while still allowing them to use scientific techniques to complete their project assignments. The subjects of this study were 80 first-year undergraduate students enrolled in the *Bahasa Inggris* (English) course. The snowball method questionnaire was obtained, and questionnaires were distributed to the students' WhatsApp groups by performing snowball operational. The Lectures combined virtual face-to-face video conferencing applications on e-learning. *Kahoot* is an add-on application used. In general, online learning has a positive effect on students' learning success. However, there are still learning obstacles in academic performance in online learning. On the other hand, learning obstacles occur because of students' limitations in developing themselves or their mental readiness to learn. As a result, digital learning may blend real issues with theoretical concepts in the classroom without neglecting the learning objectives that have been set for student engagement.

Corresponding Author: Rakhmat Wahyudin Sagala, Universitas Muhammadiyah Sumatera Utara, Indonesia.

E-mail: rakhmatwahyudin@umsu.ac.id



© Rakhmat Wahyudin Sagala, Tri Indah Rezeki

This is an open access article under the CC BY-SA 4.0 international license.

1. Introduction

The development of specific subjective and identities such as the rational person, the independent individual, or the democratic citizen is noticed as the goal of education (Biesta, 2015). Humans require education to achieve their potential, and education is an endeavor to do so through a learning process or other techniques that society acknowledges and accepts (Graves et al., 2017). In Indonesia, education and learning have advanced to a new level. For example, the Indonesian government instructed Higher Education Institutions (HEIs) learning to implement blended learning, but at the time, the WHO announced Covid-19 as a global pandemic that resulted in physical distancing. Therefore, the government instructed us to work from home to reduce the spread of Covid-19. One of the consequences is the closedown of schools from kindergarten to higher education the implemented countrywide school closures in response to the pandemic (Sukendro et al., 2020). Consequently, instructional activities are carried out over a network utilizing a MOOC-based learning management system, but students have experienced learning challenges in practice (Bujang et al., 2020). This study attempts to discover the students' challenges during studying and offer ways to alleviate these issues.

In 2019, HEIs implemented blended learning, but is not practical. Numerous studies have suggested using blended learning to integrate technology into curriculum and degree of involvement (Tawfik et al., 2017). Teachers' deficiencies in handling information technology for learning provide an impediment (Christensen & Knezek, 2017). Level of education, age, gender, educational experience, and complexity in utilizing computers in education influence technology adoption (Schiller et al., 2020). On the other hand, the previous study points to a practical gap in integrating technology into learning (Christensen & Knezek, 2017). Another research

found considerable growth in technology integration preparation during student teaching and significant heterogeneity in individual change trajectories of technology integration preparedness (Sun et al., 2017).

New technology advancements have frequently been credited as holding the potential to cause significant contributions to education. Mobile devices, according to the majority of students, will change the way they study in the future and make learning more enjoyable (Pearson, 2015). Many pedagogical scholars consider that poor classroom engagement has a detrimental influence on learning outcomes; thus, this study topic has received a lot of attention and effort over the years (Parsons & Taylor, 2011). Learners' self-motivation and professionalism can be improved through digital learning (Lin et al., 2017). Students can study independently using an online or web-based approach to learning (Rahman et al., 2015). This study contributes to high-quality learning by putting students in real-world e-learning situations while still allowing them to use scientific techniques to complete their project assignments. As a result, digital learning may blend real issues with theoretical concepts in the classroom without neglecting the learning objectives that have been set for student engagement.

To attain the goals, this study aims to answer the following research questions:

RQ1: Is MOOCs using Kahoot effective to increase student academic performance in the Bahasa Inggris course?

RQ2: Does the use of MOOCs significantly affect the student engagement as a predictor of academic achievement?

This study contributes to high-quality learning by putting students in real-world e-learning situations while still allowing them to use scientific techniques to complete their project assignments. The product of the 21st century national education paradigm is a basic principle that involves the following aspect: a philosophical framework for applying formal and informal education and learning processes in all parts of human existence.

2. Theoretical framework

2.1. Gamification for digital learning

Students can utilize technology for general social media, online chatting applications, and various smartphone apps (Gikas & Grant, 2013). However, they have difficulty using it for productive tasks such as studying, creating learning materials, assessing learning (Jeong & Hmelo-Silver, 2010). Students' learning obstacles show a discrepancy or disparity between their predicted academic success and actual academic achievement. Learning problems issue various causes, including internal and external factors, when participating in MOOC activities (Westwood, 2008). Internal variables which highlight emotional elements including motivation, self-confidence, self-esteem, and attitudes, are the first. The second external influences are socio-cultural aspects such as instructors, learning tools, and classroom culture. The acronym MOOC is commonly linked to a course on connectivism and connective knowledge in 2008 (Mackness et al., 2010). The MOOC phenomenon is the entire students' experience in applying lessons acquired from students' experiences to improve online learning and teaching practice in the university (Zutshi et al., 2013).

MOOC and LMS architecture have evolved into a life-based learning culture; modern construction that must serve as a model in the learning environment. The presence of technology which is based on the installation of LMS infrastructure is a vision of democracy that predates MOOCs (Bogar'in et al., 2018). In general, the SPADA program serves as a learning management system for academic institutions. Universitas Muhammadiyah Sumatera Utara has undertaken outreach, workshops, and technical advice for lecturers and students to create hybrid (blended) learning model learning tools to administer the learning management system application.

As the e-learning advantages of student engagement and rapid feedback are understood, instructional games are receiving greater attention in the classroom (Plump & LaRosa, 2017). *Kahoot* is a gamified educational tool that focuses on students' motivation and participation. This article contributes to this objective by presenting the outcomes of a study found explicitly at whether using *Kahoot* learning applications improve academic achievement and student engagement in classes. The timeframe of a mobile learning intervention is another important aspect that influences its efficacy. Longer interventions are shown to be more effective since they allow students to be properly integrated into the learning process, with the intended effects being obtained over time (Pechenkina et al., 2017). Another study criticizes gamification. Since gamification is not correctly integrated into a system (Burke, 2014), it may fail to interest users and cause participation difficulties (Mohamad et al., 2017).

1.2. Student engagement

Student engagement is potential in helping researchers and educators understand how students' widespread participation in studies and their completion of more specialized learning activities may result in meaningful

outcomes in digital learning settings (Wiseman et al., 2016). Henrie et al (2015) augment academic achievement with supporting activities based on Fredricks et al. (2004) students' engagement. Student engagement tackling the issue of low achievement, high levels of student ennui, alienation, and a substantial dropout rate. Furthermore, student engagement is defined as a meta-construct that encompasses behavioral, emotional, and cognitive engagement (Fredricks et al., 2004). First, behavioral engagement refers to the notion of participation. Behavioral engagement included in social or academic and extracurricular activities and is considered critical to achieving positive academic results and preventing dropouts. The second is emotional engagement which includes excellent and negative emotions to instructors, classmates, academics, and school and thought to help students form bonds with institutions and affect their motivation to fill the tasks. The third is cognitive engagement which is based on the concept of investment, and it includes thinking and the desire to put in the work required to understand complex topics and master difficult abilities.

Previous studies argued that it is critical to ensure that students are appropriately engaged throughout online lectures to make these digital learning sessions engaging and similar to traditional offline classrooms. Bhardwaj et al, (2021), contribute to the academic system's support and attempt to offer digital learning platforms some legitimacy. They introduced innovative deep learning-based algorithms that track student's emotions in real-time, including anger, disgust, fear, happiness, sorrow, and surprise (Bhardwaj et al., 2021). In addition, technology may also help students achieve their learning goals and create an educational experience that engages them using primary digital materials (Lindquist & Long, 2011). Therefore, this study focuses on *Kahoot* gamification platform that can improve student engagement in digital learning.

2. Method

This study aimed to address the research question on how MOOCs using *Kahoot!* increase student engagement as a medium for digital learning in Higher Education. The qualitative case study employed a questionnaire and observations (Creswell & Creswell, 2017) involving 80 students enrolled in two departments adopting MOOCs using e-learning and *Kahoot!* as an additional application.

A qualitative case study is essential in the development of applied education since this provides an in-depth and complete explanation of the phenomena and is grounded in real-life events (Merriam, 1998; Yin, 1994), speech, and the behavior in the form of descriptive data (Taylor et al., 2015).

3.1. Research participants

A total of 80 first-year undergraduate students enrolled in Bahasa Inggris course took part in the study. This course offers two credit hours for 16 weeks. The lecturer invited all students to sign up for an e-learning management system on the first day of class and assigned them to finish the online portion of the course. From week 9 to the end of the semester, *Kahoot* activities are held.

3.2. Technical and development issue

The authors implemented *Kahoot* in the Bahasa Inggris course which is a general course for undergraduate students. Lectures combined virtual face-to-face video conferencing applications on e-learning. *Kahoot* is an add-on application used. In this study, the authors focused on the students' engagement during the learning process without *Kahoot* during the first eight meetings and the rest with *Kahoot*. The data were gained from focus group discussion and open ended questionnaire to develop an in-depth description. (Creswell & Creswell, 2017; Yin, 1994).

4. Result and Discussion

4.1. Results

The participants were 80 college students enrolled in the Bahasa Inggris course. These students were first-semester majoring Elementary School Teachers Study Program and the Indonesian Language and Literature Study Program. Teaching and learning were carried out via e-learning management system offered by Universitas Muhammadiyah Sumatera Utara.

The snowball method questionnaire was obtained, and questionnaires were distributed to WhatsApp groups students by performing snowball operational. This study has two results: learning obstacles in digital learning and the utilization of MOOCs using *Kahoot* in digital learning to decrease learning obstacles.

First, the authors detected learning obstacles accessed by students. The data were collected from interview. To determine students' learning obstacles a test consisted of two questions was used, a test consisted phrases and clauses. The test questions are asked so that mistakes or conceptual mistakes may be found, and errors can be processed as students learn phrases and clauses. The authors consequently know the outcomes of a section and various learning obstacles analyses based on test findings.

Learning obstacle occurs because of the students' limitations in developing themselves or related to the students' mental readiness to learn. It also, includes not having clear learning goals, lack of interests, often, disability to

follow the lesson, study habits, and lack of mastery of language. School environment factors include giving lessons—lack of reading materials, lack of tools, learning materials. Students' environment includes interference from other genders, working while studying, being active in the organization, not having colleagues in the study together.

Secondly, the authors concluded that MOOCs using *Kahoot* effectively increase the students' engagement in the Bahasa Inggris course. Again, this is related to the three elements of student engagement (Fredricks et al., 2004). As the interviewees showed in the following results:

"I'm trying to finish Kahoot quizzes even though the time is short" (S.3)

"When the lecturer explains the material, I concentrate in order to understand the material so that we can answer the quizzes" (S.5)

From the data, S3 and S5 showed behavioral engagement that symbolize individual items to request students to provide reports on their focus, presence, homework, class preparation, class participation, thought, school embroilment, effort, compliance with class regulations, and risk behaviors (Fredricks et al., 2004).

Then, S.40 and S.49 showed emotional reactions such as reacting to failure and challenges, being anxious, expressing feelings of belonging; and seeing school as worthwhile as the example the example stated by respondent below:

"I prefer to do an offline written tests instead of using the Kahoot" (S.40)

"I prefer lecturer only using zoom meeting without Kahoot quiz" (S.49)

Students' cognitive engagement ranges from simple storage to self-regulated learning techniques, which encourage in-depth knowledge and competence. For example, S.54 and S.64 reported:

"I feel that using Kahoot makes it easier for me to understand the material" (S.54)

"The use of Kahoot provides new experience in online learning strategies" (S.64)

The authors found that *Kahoot* MOOCs can improve the participation of students for some reasons in a Bahasa Inggris course. Student engagement routes can be social or academic and can arise from the possibility of participation in college or classroom, interpersonal interactions, and intellectual activities. However, although such circumstances challenged the students, they decided to manage the obstacles by practicing learning activities.

The authors conclude that MOOCs use *Kahoot* in the digital era using a variety of additional applications to raise student engagement. The learning process should involve social interaction strongly that there is an exchange of knowledge, discussions, and problem-solving. Therefore, it also means the lecturer and students are responsible in using ICT applications in teaching and learning. Another study revealed a substantial improvement in technology integration preparedness in student teaching and considerable diversity in individual change paths (Sun et al., 2017).

4.2. Discussion

This study aimed to find out the utilization of MOOCs using *Kahoot* and student engagement in digital learning. Responding to the Directorate General of Learning and Student Affairs program, HEIs in Indonesia actively conduct socialization, counseling, and training for lecturers to achieve ICT-oriented.

The first finding is learning obstacles detected during digital learning activities in the Bahasa Inggris course. Second, MOOCs using *Kahoot* effectively increase student engagement in the Bahasa Inggris course. The fact that the use of MOOCs using significantly affects student engagement as a predictor of academic achievement, a significant interest in discovering methods will improve and increase student engagement at all level education (Williams & Whiting, 2016).

The questionnaire data confirm students' behavioral engagement. S.3 said he trying attempt to complete *Kahoot* quizzes even though the time is short. Moreover, S.5 performed high concentration on comprehending the topic to answer the questions. Overall, the students learned and paid attention to every question, focused on content comprehension, and completed *Kahoot* quizzes. Then, in emotional engagement, students have a positive orientation towards learning and have emotional closeness so that students tend to act following the vision and mission of learning. As S.54 mentioned that he prefers *to do offline written tests instead of using the Kahoot*, besides students also continue to follow the lectures. On the other hand, cognitive engagement can increase the students' learning success. Those who are cognitively involved have good learning outcomes. As S.54 argued that he could can comprehend the content easily by utilizing *Kahoot*. It can be concluded that cognitive engagement involves solving problems, the inclination for hard effort, and good management faced with failure.

A final recommendation from this study would be a calling for reasonable but compatible HEIs targets, not stacking up additional schoolwork on burdening the students but creating robust, practical, and realistic curricular infrastructure. In this case, lecturers and students can maximize the use of MOOCs so that there are no more learning obstacles in learning foreign languages. However, universities can obtain new strategies in implementing MOOC-based learning to match the qualifications of the National Higher Education Standards. It is because students realize the urgency of integrating ICT in learning so that they can better prepare for learning 4.0

5. Conclusion

The current conclusion of this study is the data demonstrated by the output of students who have significant difficulty in learning English and the four competencies of English in the Primary School teacher program and Indonesia's language and literature study program. The data from the questionnaire show that the students' behavioral engagement showed they learn regularly, pay attention to every quiz question, focus on understanding the material, and accomplish quizzes with *Kahoot*. In emotional engagement, students have a positive orientation towards learning and have emotional closeness so that they tend to act in accordance with the vision and mission of learning. On the other hand, the cognitive engagement component can increase the students' learning success. Those who are cognitively involved have good learning outcomes

Another opinion-related learning obstacle is smartphones (Mehdipour et al., 2013), including student distraction with the device while in the classroom; sending or receiving entertaining messages from colleagues; lecturer's insulation; lack of attention during the lecturer's speech; and decreased academic performance. Language proficiency might be assessed more subjectively as an outcome, as when social peers associate individual expressions of eloquence with people who appear "educated." (Tergujeff, 2021; Wong, 2020; Wyatt & Dikilitas, 2021).

This study indicates that lecturers and students have confidence regarding their preparation to use the learning management system. Nevertheless, the study's findings also indicate learning obstacles in the platform. But the learning obstacle is not a limitation but reasonableness due to the sudden migration process.

Thus, reasonableness becomes a challenge for English as a foreign language learning researchers to produce recommendations for suitable learning models to produce quality learning on digital platforms. As discussed, learning on digital platforms carries the risk of reduced interaction, student engagement, student loafing, and social presence. In contrast, the learning process requires strong social interaction to exchange knowledge, discussion, and problem-solving.

Acknowledgement

The authors thank Universitas Muhammadiyah Sumatera Utara for supported by research grant. The authors thank the Elementary School Teacher Study Program and the Indonesian Language and Literature Study Program for their participation.

References

- Bhardwaj, P., Gupta, P. K., Panwar, H., Siddiqui, M. K., Morales-Menendez, R., & Bhaik, A. (2021). Application of Deep Learning on Student Engagement in e-learning environments. *Computers & Electrical Engineering*, 93, 107277.
- Biesta, G. J. J. (2015). *Beyond learning: Democratic education for a human future*. Routledge.
- Bogarlin, A., Cerezo, R., & Romero, C. (2018). A survey on educational process mining. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*, 8(1), e1230.
- Bujang, S. D. A., Selamat, A., Krejcar, O., Maresova, P., & Nguyen, N. T. (2020). Digital Learning Demand for Future Education 4.0—Case Studies at Malaysia Education Institutions. *Informatics*, 7(2), 13.
- Burke, B. (2014). Why gamification is not a game. *CIO Journal*.
- Christensen, R., & Knezek, G. (2017). Readiness for integrating mobile learning in the classroom: Challenges, preferences and possibilities. *Computers in Human Behavior*, 76, 112–121.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109.
- Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones, smartphones & social media. *The Internet and Higher Education*, 19, 18–26.
- Graves, A., Bellemare, M. G., Menick, J., Munos, R., & Kavukcuoglu, K. (2017). Automated curriculum learning for neural networks. *International Conference on Machine Learning*, 1311–1320.

- Henrie, C. R., Halverson, L. R., & Graham, C. R. (2015). Measuring student engagement in technology-mediated learning: A review. *Computers & Education*, 90, 36–53.
- Jeong, H., & Hmelo-Silver, C. E. (2010). Productive use of learning resources in an online problem-based learning environment. *Computers in Human Behavior*, 26(1), 84–99.
- Lin, M.-H., Chen, H., & others. (2017). A study of the effects of digital learning on learning motivation and learning outcome. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(7), 3553–3564.
- Lindquist, T., & Long, H. (2011). How can educational technology facilitate student engagement with online primary sources? A user needs assessment. *Library Hi Tech*.
- Mackness, J., Mak, S., & Williams, R. (2010). The ideals and reality of participating in a MOOC. *Proceedings of the 7th International Conference on Networked Learning 2010*, 266–275.
- Mehdipour, Y., Zerehkafi, H., & others. (2013). Mobile learning for education: Benefits and challenges. *International Journal of Computational Engineering Research*, 3(6), 93–101.
- Merriam, S. B. (1998). *Qualitative Research and Case Study Applications in Education. Revised and Expanded from "Case Study Research in Education."* ERIC.
- Mohamad, S. N. M., Salam, S., & Bakar, N. (2017). *An analysis of gamification elements in online learning to enhance learning engagement*.
- Parsons, J., & Taylor, L. (2011). Improving student engagement. *Current Issues in Education*, 14(1).
- Pearson, H. P. (2015). Pearson student mobile device survey 2015. *National Report: College Students* <https://www.pearsoned.com/wp-content/uploads/2015-Pearson-Student-Mobile-Device-Survey-College.Pdf> Webcite.
- Pechenkina, E., Laurence, D., Oates, G., Eldridge, D., & Hunter, D. (2017). Using a gamified mobile app to increase student engagement, retention and academic achievement. *International Journal of Educational Technology in Higher Education*, 14(1), 1–12.
- Plump, C. M., & LaRosa, J. (2017). Using Kahoot! in the classroom to create engagement and active learning: A game-based technology solution for eLearning novices. *Management Teaching Review*, 2(2), 151–158.
- Rahman, N. A. A., Hussein, N., & Aluwi, A. H. (2015). Satisfaction on blended learning in a public higher education institution: What factors matter? *Procedia-Social and Behavioral Sciences*, 211, 768–775.
- Schiller, A., Brassington, G. B., Oke, P., Cahill, M., Divakaran, P., Entel, M., Freeman, J., Griffin, D., Herzfeld, M., Hoeke, R., & others. (2020). Bluelink ocean forecasting Australia: 15 years of operational ocean service delivery with societal, economic and environmental benefits. *Journal of Operational Oceanography*, 13(1), 1–18.
- Sukendro, S., Habibi, A., Khaeruddin, K., Indrayana, B., Syahrudin, S., Makadada, F. A., & Hakim, H. (2020). Using an extended Technology Acceptance Model to understand students' use of e-learning during Covid-19: Indonesian sport science education context. *Heliyon*, 6(11), e05410.
- Sun, Y., Strobel, J., & Newby, T. J. (2017). The impact of student teaching experience on pre-service teachers' readiness for technology integration: A mixed methods study with growth curve modeling. *Educational Technology Research and Development*, 65(3), 597–629.
- Tawfik, A. A., Reeves, T. D., Stich, A. E., Gill, A., Hong, C., McDade, J., Pillutla, V. S., Zhou, X., & Giabbanelli, P. J. (2017). The nature and level of learner--learner interaction in a chemistry massive open online course (MOOC). *Journal of Computing in Higher Education*, 29(3), 411–431.
- Taylor, S. J., Bogdan, R., & DeVault, M. (2015). *Introduction to qualitative research methods: A guidebook and resource*. John Wiley & Sons.
- Tergujeff, E. (2021). Second language comprehensibility and accentedness across oral proficiency levels: A comparison of two L1s. *System*, 102567.
- Westwood, P. S. (2008). *What teachers need to know about learning difficulties*. Aust Council for Ed Research.
- Williams, D., & Whiting, A. (2016). Exploring the relationship between student engagement, Twitter, and a learning management system: A study of undergraduate marketing students. *International Journal of Teaching and Learning in Higher Education*, 28(3), 302–313.
- Wiseman, P., Kennedy, G., & Lodge, J. (2016). *Models for understanding student engagement in digital learning environments*.

- Wong, Y. K. (2020). Effects of language proficiency on L2 motivational selves: A study of young Chinese language learners. *System*, 88, 102181.
- Wyatt, M., & Dikilitaş, K. (2021). English language teachers' self-efficacy beliefs for grammar instruction: implications for teacher educators. *The Language Learning Journal*, 49(5), 541–553.
- Yin, R. K. (1994). Discovering the future of the case study. Method in evaluation research. *Evaluation Practice*, 15(3), 283–290.
- Zutshi, S., O'Hare, S., & Rodafinos, A. (2013). Experiences in MOOCs: The perspective of students. *American Journal of Distance Education*, 27(4), 218–227.