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Jurnal Pengabdian Kepada Masyarakat
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Implementation of the Kahoot! as an Effort to Improve the Quality of Interactive Physics Learning at SMAN 6 Bengkulu Tengah

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Article Information:
Received August 31, 2025
Revised September, 2025
Accepted September 24, 2025

Keywords:
Digital Technology; Interactive learning; Kahoot!; Physic Education

Abstract

Background of the Study: The incorporation of technology in education has become increasingly vital in the digital age, especially to augment student interest and engagement in physics, a discipline frequently regarded as challenging and uninspiring.

Purpose and Scope of the Paper: This community service program seeks to utilize Kahoot! as an interactive digital learning platform to enhance student engagement in physics education at Senior High School 6 (SMAN 6) Bengkulu Tengah.

Methods: We implemented the activities using a participatory method, including direct instruction for teachers and interactive Kahoot! sessions with students. The activity encompassed socialization, demonstrations, and practical applications in the educational context.

Results: The findings demonstrated that both educators and learners reacted favorably to the implementation of Kahoot! resulting in heightened student' engagement and a more vibrant classroom environment. Students exhibited enthusiasm, a competitive disposition, and enhanced concentration throughout physics learning sessions.

Conclusions: Kahoot! serves as an exciting and effective alternative learning platform that promotes active engagement and improves comprehension of physics subjects. It offers educators a pragmatic instrument to enhance pedagogical approaches in accordance with the traits of the digital generation.

A. Introduction

Advancements in information technology have engendered substantial transformations in the domain of education. Innovations in education, particularly digital technology, have demonstrated an improvement in the efficacy of the teaching and learning process. Physics commonly poses difficulties for students since it necessitates advanced conceptual and analytical comprehension. Zainuddin et al. (2019) contend that a novel and engaging methodology is essential for enhancing the quality of physics education in schools, as traditional teacher-centered practices often limit students' active involvement and motivation. Previous studies have primarily focused on cognitive outcomes without adequately addressing the issue of student engagement, leaving a gap between modern learning theories and classroom practices. The novelty of Zainuddin et al.'s work lies in proposing a pedagogical approach that integrates innovative strategies and

How to Cite : Utama, T.H., koto, I., Yanti, F.A., Lestari, L., Rahmawati, N.I., & Hafishbulla, I. (2025). Implementation of the Kahoot! as an Effort to Improve the Quality of Interactive Physics Learning at SMAN 6 Bengkulu Tengah. *Aktual: Jurnal Pengabdian Kepada Masyarakat*, 3(3), 106–113. https://doi.org/10.58723/aktual.v3i3.475
ISSN : 2987-6052
Published by : CV Media Inti Teknologi

technology to foster interactive, meaningful, and student-centered learning experiences in physics education.

This highlights the necessity for teachers to thoroughly equip themselves, especially in cultivating skills as proficient technology instructors. The integration of technology-based media in education will improve comprehension among educators and learners about the crucial importance of technology in the Fourth Industrial Revolution (Jamiludin et al., 2020). This consciousness must originate with teachers, the principal catalysts of transformation in education. Consequently, educators must proficiently understand and acquaint themselves with many technology-based learning media to effectively incorporate them into instructional activities, both within the classroom and beyond the school setting.

Advancements in information technology have significantly transformed the educational landscape. Lai et al. (2017) assert that technology enhances students' learning experiences and fosters academic achievement. The incorporation of digital technology in educational innovations is essential for enhancing the efficacy of the teaching and learning process. Moreover, Bao and Koenig (2019) contend that 21st-century education emphasizes three primary skill categories: cognitive, interpersonal, and intrapersonal, each encompassing a wide array of subdimensions relevant to physics education.

Kahoot! is an educational platform that utilizes gamification to improve student involvement in the learning process (Supiyanti & Iriyadi, 2022; Wijaya et al., 2025). Kahoot! is a worldwide interactive educational platform that signifies a technological transformation in pedagogy (Irwan, 2019). However, Kahoot! is categorized into two types: individual play (Kahoot-I) and team-based play (Kahoot-T). The individual mode provides a tailored learning experience that enhances student motivation, engagement, self-directed learning, and personalized feedback, while simultaneously alleviating learning anxiety (Castillo-Manzano et al., 2016).

Kahoot! offers numerous advantageous features for educators and learners alike. It is readily accessible and accommodates several activity types, including quizzes, polls, and discussion topics. The platform is user-friendly, facilitates rapid student engagement via automatically generated game PINs, and is compatible with many platforms, including smartphones, tablets, and PCs. The amalgamation of music and vivid imagery amplifies student engagement and pleasure. Furthermore, educators can download and analyze student performance data for supplemental assessments (Ismail & Mohammad, 2017).

Kahoot! educational approach effectively engaged pupils and drove them to focus on classroom activities. This facilitated the more effective administration of the educational setting. (Anestasya et al., 2025) conducted a study demonstrating the efficacy of digital assessment utilizing the Kahoot! platform to gauge students' understanding of physics concepts. Moreover, pupils reacted positively to its implementation; hence, Kahoot! is deemed suitable for continued incorporation into the instructional framework. Kahoot! media enhances pupils' understanding of the subject matter being studied.

The application of gamification in formative assessment via interactive electronic tests has enhanced engagement among educators, learners, and peers, contingent upon adequate internet access and technology resources. (Yılmaz, 2023) According to the description and previous experiences, the Kahoot! app is among the most efficacious instruments for physics instruction. The application's aesthetically pleasing UI and timer functionality promote student engagement in active learning as they address inquiries. The aim is to enhance student enthusiasm and engagement in physics by employing quizzes via the Kahoot! to promote learning.

The subsequent elements were the rationale for choosing SMAN 6 Bengkulu Tengah as the venue for the activity: Despite the prevalence of traditional methods, the school has not undergone training in interactive digital learning media. Educators and learners exhibit considerable excitement for educational advances. Students possess a constrained comprehension of the application of interactive technology-driven educational material. This community service initiative, aimed at introducing and implementing Kahoot, is expected to be the initial phase in fostering a more participatory and engaging learning environment, as well as enhancing educational technology proficiency at SMAN 6 Bengkulu Tengah, Bengkulu province (Indonesia). The primary objective of this study is to examine the effectiveness of Kahoot as an interactive learning tool in improving student engagement, motivation, and understanding of learning materials in the context of physics education.

B. Methods

This community service initiative employed a participatory methodology involving introduction, training, and direct implementation for kids. This exercise targeted instructors and students at SMA Negeri 6 Bengkulu Tengah, emphasising the use of Kahoot! as a technology-driven interactive learning tool. The exercise was conducted in three phases, specifically:

1. Preparations

The community service (PKM) team originally collaborated with SMAN 6 Bengkulu Tengah to determine the schedule, arrange training equipment, and develop socialization materials. The teachers' requirements for digital learning resources were subsequently identified. The activity involved 30 students from the Natural Science (IPA) program, consisting of 13 female and 17 male students. The primary objective of this study is to examine the effectiveness of Kahoot as an interactive learning tool in improving student engagement, motivation, and comprehension of learning materials, particularly within the context of physics education The profile of the school is as follows:

Table 1. Profile of SMAN 6 Bengkulu Tengah

No	Identity	School Profile
1	School Name	SMA Negeri 6 Bengkulu Tengah
2	School Address	JL. Raya Air Sebakul Kode Pos.38381, Air Sebakul, Kec. Talang Empat, Kab. Bengkulu Tengah, Bengkulu.
3	NPSN	69734272
4	School Status	Public
5	Education Level	Senior High School
6	Accreditation	B
7	Authority	Ministry of Education and Culture
8	Date Established	March 31, 2011
9	Establishment Decree Number	No. 08 of 2011
10	Operational Date	March 31, 2011
11	Operational Decree Number	No. 08 of 2011
12	Number of Teachers	28 teachers
13	Number of Students	210 students

2. Implementation

In the socialization phase, the PKM team delivered Kahoot! to teachers and students at SMAN 6 Bengkulu Tengah as an interactive, technology-driven educational tool. This activity provided a thorough examination of the functions, benefits, and operating mechanics of Kahoot! targeting both teachers as quiz creators and learners as participants. The aim was to provide initial insights into the use of technology in an interactive and participatory educational process.

Figure 1. Introduction of the Kahoot! at SMAN 6 Bengkulu Tengah

3. Evaluation

During the evaluation phase of the community service initiative, Kahoot! was directly integrated into the physics curriculum, engaging 30 students. This study sought to evaluate the efficacy of Kahoot! in enhancing student engagement and motivation in the study of physics. The observation results revealed that students exhibited enthusiasm and engagement in responding to questions, reflecting a significant interest in the learning material offered. This indicates that Kahoot! can be a successful and pleasant alternative learning medium in an educational setting.

C. Results and Discussion

On June 19, 2025, the implementation team held a community service activity that included initial socialization and education regarding the utilization of the Kahoot! application for physics lessons at SMAN 6 Bengkulu Tengah . This activity was motivated by the significance of technology-driven learning innovations that can augment active student interaction and foster an enjoyable and competitive educational atmosphere. In the preparatory phase of the activity, the implementation team initially presented Kahoot! to educators and students. Students were instructed on how to access and respond to questions directly via digital devices, as illustrated in Figure 2, allowing them to engage in a more dynamic and participative learning environment firsthand.

Figure 2. Steps to Create a Kahoot! Accoun

Following the completion of the application introduction, the activity progressed to a hands-on session that engaged the students actively. During this session, the implementation team instructed the students on how to access and utilise the Kahoot! program on their personal devices, including mobile phones and laptops. The students were invited to participate in an interactive quiz created by the team, with 15 multiple-choice questions on the topic of electricity in physics.

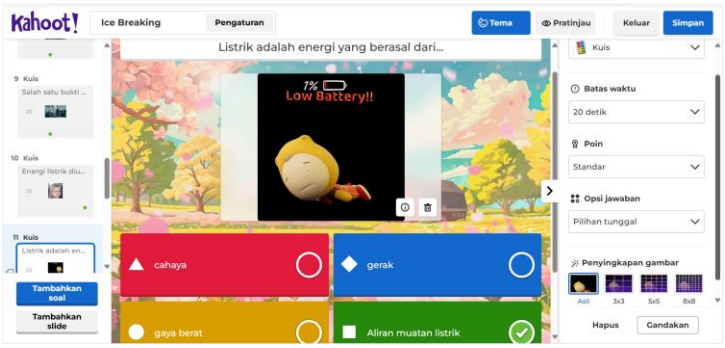

Figure 3. Quiz display on Kahoot!

Students exhibited considerable enthusiasm during the lesson. They were concentrated, competitive, and enthusiastic about responding to questions promptly and correctly, since the Kahoot! app's scoring system assesses performance based on the rapidity and precision of answers. The classroom environment became far more vibrant than traditional learning approaches. This activity functioned as both a practice session and a catalyst for dynamic interaction among students and between students and teachers. Oppong et al. (2024) stated that the use of Kahoot! garnered favorable feedback from teachers who regarded the as efficient in promoting student involvement and active participation.

This corresponds with several study findings highlighting the significance of contact, teamwork, and pleasant elements in establishing an ideal learning experience. (Hermawati & Solihin, 2023) employed digital game-based learning media via the Kahoot platform in their community service project to enhance instructors' innovative teaching skills, leading to an engaging and interactive classroom experience. In their community service project, (Mclean et al., 2024) provided training on the utilization of digital game-based learning media via the Kahoot! platform, thereby equipping educators with creative abilities to foster more interactive and engaging classroom experiences.This session provided an enjoyable and motivating technology-based learning experience.

The majority of students have indicated that they comprehend physics topics more readily when taught through games (game-based learning), hence alleviating the stress of the learning process. This strategy acts as a conduit to enhance the interest of students who were previously disengaged from Physics. This corresponds with the findings of (Salti et al., 2023), which indicate that the online evaluation of learning outcomes in linear motion via the Kahoot! was executed efficiently and significantly enhanced students' engagement and academic performance at the high school level. (Bawa, 2019) indicated that students exhibited superior performance and engagement when utilising Kahoot! in contrast to conventional teaching approaches. Kahoot! is an engaging, game-based educational platform that facilitates the creation, sharing, and playing of instructional games (Nurlaela & Nawir, 2020).

Figure 4. Implementation of Kahoot! by Students

Figure 5 presents a bar chart depicting the physics quiz results obtained through Kahoot!, illustrating the distribution of students according to the number of correct answers out of a total of 15 questions. Student performance varied, with correct responses ranging from 2 to 13, and the majority of students answering between 7 and 11 questions accurately. The highest frequency was observed at 10 correct answers, achieved by 9 students. This distribution tends to approximate a normal pattern, indicating that the quiz items were of moderate difficulty and capable of proportionally measuring students' conceptual understanding. The results also demonstrate that the implementation of Kahoot! effectively fostered an interactive quiz environment and promoted active student engagement during the exercise. Moreover, formative assessment in science education is acknowledged for its ability to improve academic performance, student motivation, and engagement, and the use of Kahoot! in this context further supports its role as an effective formative evaluation tool. Teachers may utilize the data generated to design targeted instructional strategies, such as providing remedial support for students with lower achievement and extending enrichment activities for high-achieving students. Kahoot!, an interactive game-based learning platform, has demonstrated its efficacy in enhancing academic achievement and fostering active classroom involvement (Mdlalose et al., 2021; Muhd Al-Aarifin et al., 2019).

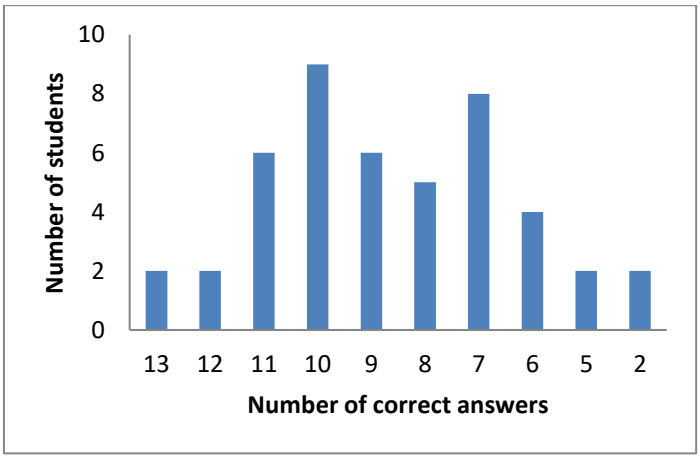

Figure 5. Bar Chart of Physics Quiz Results Using Kahoot!

B. Conclusion

The community service initiative conducted at SMAN 6 Bengkulu Tengah demonstrates that Kahoot! serves as an effective alternative interactive learning medium, particularly for physics education. The implementation of Kahoot! has demonstrated an increase in student engagement and the stimulation of learning passion within the classroom environment. This tool aids educators in creating more engaging, adaptive, and digitally compatible learning experiences suited to the traits of the digital generation. This effort is anticipated to catalyze the use of interactive learning technologies at SMAN 6 Bengkulu Tengah and other schools more broadly. The primary objective of this initiative is to enhance students' conceptual understanding, motivation, and active participation through the integration of digital tools in physics instruction. Future research may further explore the long-term impact of Kahoot! on learning outcomes, compare its effectiveness with other interactive platforms, and investigate its role in supporting differentiated instruction across various student ability levels.

C. Acknowledgment

We wish to convey our profound appreciation to the principal of SMAN 6 Bengkulu Tengah for his authorization and assistance in executing this training program. We extend our gratitude to all the educators for their exceptional dedication during the training, and to the students for their fervent participation. Furthermore, we gratefully acknowledge the Department of Physics Education, University of Bengkulu (UNIB), for providing financial support that enabled the successful implementation of this community service initiative.

C. Author Contribution Statement

THU played a pivotal role in the conceptualization, oversight, and comprehensive management of the community service program. IK was accountable for formulating the technique and supervising teacher training sessions. FAY participated in data collection and aided in organizing student activities. LL managed logistics facilitated communication with the school and provided assistance with documents. NIR performed the literature review and assisted in the creation of instructional materials. IH facilitated the technical execution and coordinated the evaluation process. All authors contributed to the composition and revision of the work and endorsed the final version.

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