

Enhancing Student Engagement through Wordwall-Based Interactive Learning in Vocational School

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Abstract

Purpose: This study focuses on how learning with Wordwall-based interactions can increase the activity and enthusiasm of students in the Sharia Banking Accounting subject at SMK Negeri 1 Klaten. In such learning, the use of traditional and limited media has led to lower participation, decreased motivation, and inadequate learning achievements.

Methodology: A qualitative case study approach was used with participants consisting of 45 students from classes XII AKL 1 and XII AKL 3, along with one accounting teacher. Data collection used classroom observations, semi-structured interviews, and documentation of learning activities. Data analysis followed the interactive model involving data condensation, data display, and conclusion drawing. Triangulation methods and sources were used to increase data credibility.

Results: The inclusion of Wordwall, mainly in the form of multiple-choice quiz games, resulted in a significant increase in student engagement, as demonstrated by increased observable activeness by 17.7% from 75.6% to 93.3%. Students manifested increased activity, collaborative interaction, and intrinsic motivation. The use of game-based digital media also succeeded in creating a more enjoyable learning environment and reduced passive learning behavior.

Applications/Originality/Value: This paper provides empirical evidence for the pedagogical advantages of game-based learning media in vocational education. Wordwall proved to be an effective tool for boosting active engagement and improving learning experiences. The results emphasize the potential of digital interactive platforms in supporting technology-enhanced and AI-ready learning ecosystems, in line with current educational agendas of digital transformation.

Introduction

Education does not happen of its own accord. The process requires suitable strategies and methods for the effectiveness of learning processes and achievement of instructional objectives. However, in reality, several factors curtail student performance and participation. Among the issues most consistently present is the lack of variety in learning media and instructional strategies. The absence of creative, innovative, and interactive methods often makes classroom learning tedious. This negatively affects the students' motivation to learn and results in suboptimal learning outcomes (Stefani & Haryudo, 2023). For this reason, teachers have to create an environment that makes learning attractive and increases the motivation of students to participate in learning activities (Padilla et al., 2024).

The rapid development of technology in the 21st century opens various opportunities for educators to be creative, especially in integrating digital and interactive media. Technology can be used for lesson planning, implementation, and assessment or evaluation to enable teachers to provide learning experiences that are more student-centered and participatory. Learning media are the tools necessary in facilitating communication between teachers and students and in making abstract concepts concrete in understanding. Learning media integration has, therefore, become a crucial aspect that will contribute to improving instructional effectiveness and enhancing higher-quality learning (Atapukang, 2016).

Gamified learning has emerged as a rather innovative pedagogical strategy that turns traditional lessons into engaging experiences with game-based challenges and instant feedback mechanisms. According to Niemiec & Ryan (2009), it is in these interactive environments that people show intrinsic motivation because their psychological needs for autonomy, competence, and relatedness are being satisfied. More recently, research has emphasized how gamification increases engagement along behavioral, cognitive, and emotional dimensions, especially for digital learning contexts (Thomas & Baral, 2023; Usman et al., 2025).

Regardless of the evidence from the growing body of research, studies on gamified learning within vocational education in accounting and specifically within Islamic banking remain limited. Most of the previous studies have focused either on general education subjects or on virtual learning environments, with little attention given to how digital gamification may be embedded within the classroom practice of vocational training, such as Garcia Iruela et al., 2018; Dahalan et al., 2024.

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Moreover, only a few papers have emphasized the role of gamified platforms like Wordwall in preparing teachers and students for AI-readiness and digital transformation in schools (Bayaga, 2025; Purnamasari & Purwandari, 2025). Given this context, this paper responds to a lacuna in the extant literature and analyses the extent to which Wordwall-based interactive learning fosters student engagement in Sharia Banking Accounting and informs the broader debate of gamification and digital transformation within vocational education. The current study provides empirical evidence and pedagogical insights into how low-cost, user-friendly gamified platforms could serve as an entry point toward AI-integrated learning ecosystems within Indonesia's vocational context.

Vocational education, including in Sharia Banking Accounting, is often problematic for teachers to create a good understanding and participation of students. Learning is usually teacher-centered, relying on lectures and PowerPoint, with a very limited number of interactive tools used to facilitate learning (Islam et al., 2022). The rarity of using digital media reduces students' opportunities for collaboration, exploring, and being actively involved in learning. Therefore, educators must adopt digital platforms capable of encouraging the participation of students and fostering a more dynamic learning atmosphere (Jamilah et al., 2020; Kusumawati & Mustadi, 2021).

Active learning plays a very significant role in the success of learning processes. Active learning refers to students' physical and mental activities while asking questions, giving opinions, doing assignments, and engaging in discussions with peers (Putri et al., 2024). According to Sardiman (2018), active learning embraces both aspects: cognitive and behavioral, while Nurseto et al. (2015) say this kind of learning leads the learners toward meaningful and positive behavioral change. However, actively, students often show low participation in learning activities, especially in Sharia Banking Accounting subjects, because it is often delivered in a boring manner and without the use of interactive digital tools.

One of the promising solutions could be the implementation of Wordwall, which is an online-based platform that offers a variety of interactive learning templates like matching, grouping, and quiz games and can be easily adapted for any instructional purpose. Wordwall also features over 18 available templates that can support gamified learning environments to make lessons more interactive and fun. Previous studies (Nissa & Renoningtyas, 2021; Pradani, 2022) have revealed that Wordwall increases student motivation, participation, and understanding of subject matter. While some existing studies do consider domain-specific subjects, most prior research has targeted general subjects or primary and secondary education contexts, hence providing limited evidence from vocational schools. Moreover, prior studies tend to emphasize motivational outcomes rather than documenting concrete changes in observable engagement indicators. This study will, therefore, seek to fill this gap by investigating the use of Wordwall-based interactive activities on measurable aspects of student engagement in a vocational accounting context.

Despite these advantages, observation in SMK Negeri 1 Klaten still shows interactive media are rarely used in Sharia Banking Accounting subjects, especially in class XII AKL. Conventional ways of teaching still dominate, so that students are often bored and the conceptual understanding that students achieve is less than optimal. Quizizz tools are already too familiar and no longer stimulate novelty. Therefore, an alternative digital platform is required to make classes more interactive and increase student participation, such as through Wordwall.

While some prior studies have discussed the pedagogical advantages of using Wordwall, a few have focused on its application in Indonesia's vocational schools with respect to digital transformation and AI readiness in learning. With education heading toward AI-driven innovation, the adoption of gamified and data-backed learning tools could set a foundational step toward preparing teachers and students for technology-enhanced learning in the classroom. Therefore, this research discusses the implementation of Wordwall-based learning media in increasing student activity in Sharia Banking Accounting at SMK Negeri 1 Klaten, while positioning its role in relation to AI-ready, technology-driven education transformation.

Research Method

This study used a qualitative approach with a case study design. Qualitative research is the process of studying human and social phenomena through a holistic and detailed description expressed in verbal or narrative form. It focuses on participants' perspectives and experiences in natural settings (Walidin et al., 2015). A case study method has been used to realize a more profound and contextualized understanding of the phenomenon studied. This approach is academically and practically relevant, according to Poltak & Widjaja (2024), because it enables the researcher to investigate specific cases in detail and within real-world contexts. This study used a qualitative case study design with embedded descriptive quantitative observation to investigate how student engagement in a vocational accounting course is influenced by interactive activities based on Wordwall. The case study approach allowed an in-depth exploration of classroom processes and participants' perspectives in their natural instructional context.

This research was conducted in August 2025 at SMK Negeri 1 Klaten. The participants consisted of 45 students from two accounting classes in twelfth grade, namely XII AKL 1 and XII AKL 3. The inclusion criteria for this research were students who enrolled in the accounting course in Sharia Banking and were present during the implementation of this research. Besides this, the accounting subject teacher participated as an informant to provide contextual and pedagogical data. Data collection included structured classroom observation, semi-structured interviews, and documentation. A structured observation rubric covering indicators such as verbal participation, responsiveness to Wordwall quizzes,

collaborative interaction, on-task behavior, and digital tool utilization was developed and refined through a preliminary pilot. Semi-structured interviews were conducted to capture the perceptions and experiences of both students and the teacher in implementing Wordwall. Documentation included Wordwall activity exports and student task artefacts, and photographs of classroom interactions. The research procedure started with baseline observations of two regular lessons without the use of Wordwall to establish initial engagement patterns. Then the intervention was implemented over two instructional days where the teacher integrated Wordwall-based interactive activities, such as multiple-choice quiz games. Student engagement during these two days was recorded using the structured rubric. After the intervention, interviews with the teacher and a purposive sample of students were conducted, along with the collection of relevant documents. Data analysis used the interactive model (Miles et al., 2014) for qualitative analysis-data condensation, data display, and conclusion drawing-supported by descriptive quantitative analysis of observation scores to investigate the changes of engagement indicators before and after the intervention. Credibility and dependability of the data were ensured through methodological and source triangulation, member checking, and maintaining an audit trail of analytical decisions (McLeod, 2024). Ethical considerations included securing institutional permission, informed consent from participants, confidentiality of information, and storing all digital and physical research data securely.

Results and Discussion

In this research, learning media was used through the Wordwall learning medium in the form of a multiple-choice quiz about the subject matter of Fundamental Accounting Equations in Sharia Banking. The quiz was projected at the beginning of the class to test their preliminary understanding. The mechanism of the quiz was time-based; for each correct answer, they regained 30 seconds, while wrong answers would reduce the remaining time. Students read each question projected on the screen and tried to reach what they believe to be the correct answer. The time constraint encouraged students to think both quickly and critically to provide accurate responses.

Before implementation, the researcher created the quiz on the Wordwall website by following several steps consist of (1) logging into the platform, (2) selecting the MultipleChoice Quiz template, (3) entering questions and answer options, (4) determining the correct answers, and (5) presenting the quiz using a classroom projector. Based on an interview with the cooperating teacher, it was found that Wordwall had never been used before in class. The teacher had primarily utilized Quizziz or Google Forms for online quizzes, making this a new and engaging experience for both the teacher and students. The following is some image documentation related to the development of word walls carried out by researchers on the subject of Sharia Banking Accounting.

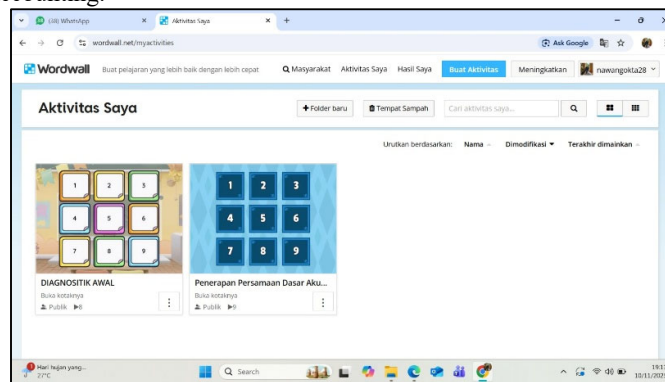


Figure 1. Screenshot of the Wordwall web application interface

The figure 1 shows a screenshot of the Wordwall web application interface on the page titled “My Activities” (Aktivitas Saya). Wordwall is an online platform that allows teachers to create interactive learning materials such as quizzes, matching games, and other educational activities. In this screenshot, there are two published activities displayed under the user’s account. The first activity on the left is titled “DIAGNOSTIK AWAL” (Initial Diagnostic), and the second one is “Penerapan Persamaan Dasar Akuntansi” (Application of the Basic Accounting Equation). Each activity is represented by a grid layout with numbered tiles, indicating that the games are likely designed in a matching or multiple-choice format. The interface also shows several menu options at the top, including “Create Activity” (Buat Aktivitas), “Community” (Masyarakat), “My Results” (Hasil Saya), and the user profile. Additional buttons such as “New Folder” (Folder Baru) and “Trash” (Tempat Sampah) are available for managing activities. Overall, this screenshot illustrates the user’s collection of interactive Wordwall activities used for classroom learning, most likely designed for the Sharia Banking Accounting subject to make lessons more engaging and to evaluate students’ understanding through gamified digital quizzes.

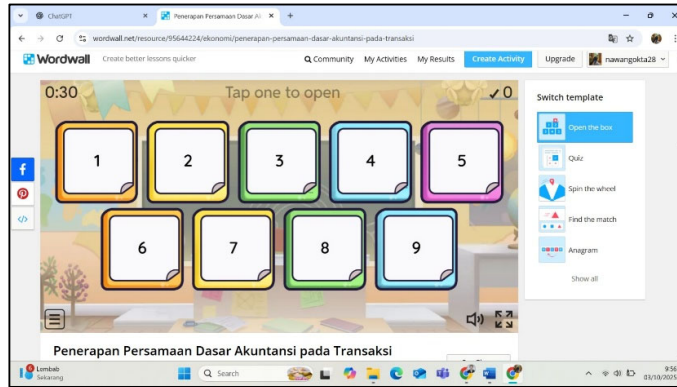


Figure 2. Screenshot of an interactive learning activity created using Wordwall

Figure 2 is a screenshot of an interactive learning activity created in Wordwall, a digital game and quiz development online educational platform. The on-screen activity is entitled “Penerapan Persamaan Dasar Akuntansi pada Transaksi” or in English, Application of the Basic Accounting Equation in Transactions. The interface is a grid of numbers within squares, 1 through 9, representing clickable items in the “Open the Box” template. Once each number inside the square is clicked, a question or task regarding the accounting subject matter appears for the students to work on. The timer at the top left, set at 0:30 seconds, lets each student know that they have 30 seconds to answer, thus providing some time-based challenge to keep things entertaining. To the right of this screen, there are a number of template options visible entitled Quiz, Spin the Wheel, Find the Match, and Anagram, proving that this platform enables the teacher to switch between a number of game formats with complete ease. This kind of interactive activity is really meant to make learning more engaging by integrating gamification elements into the accounting lesson. It allows students to review and then apply the concepts of the basic accounting equation in a fun and competitive manner; thus, active participation, critical thinking, and motivation may be fostered inside the classroom.

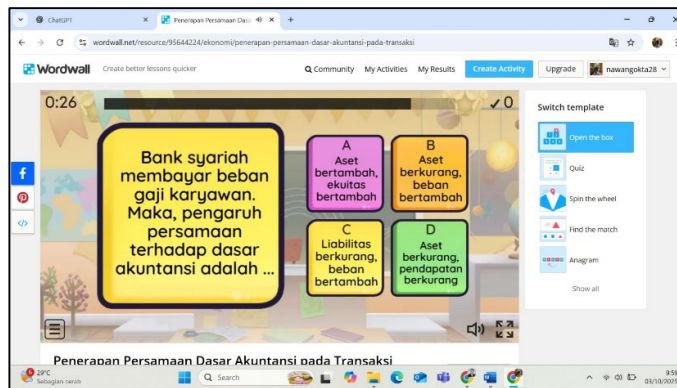


Figure 3. Screenshot of an interactive digital quiz developed using Wordwall

The figure 3 displays a screenshot of an interactive digital quiz developed using Wordwall, a web-based learning platform designed to facilitate gamified and engaging instructional activities. The quiz forms part of the learning material titled “Penerapan Persamaan Dasar Akuntansi pada Transaksi” (Application of the Basic Accounting Equation in Transactions). The featured question in the yellow box presents a scenario stating, “Bank syariah membayar beban gaji karyawan” which translated as “A sharia bank pays employee salaries”, followed by the prompt asking students to determine the effect on the basic accounting equation. Learners are presented with four choices that represent different accounting outcomes: A) assets increase, equity increases; B) assets decrease, expenses increase; C) liabilities decrease, expenses increase; and D) assets decrease, income decreases. A visible timer in the upper left corner, marked 0:26, indicates how much time is available for a student to respond, thus encouraging speed with critical thinking. On the right side of this interface, several options for different activity templates are shown: Open the Box, Quiz, Spin the Wheel, and Find the Match, which indicate the flexibility of this tool to support different learning design options. By means of this gamified multiple-choice exercise, students explore the effects of business transactions on the accounting equation in a sharia banking context. The integration of Wordwall contributes to an interactive, competitive, and fun classroom environment, which enhances motivation, engagement, and conceptual understanding in students' learning of accounting.



Figure 4 and 5. Documentation of an active and collaborative classroom activities using Wordwall

Figure 4 and Figure 5 illustrate an active and collaborative classroom atmosphere during the implementation of Wordwall-based learning activities. Although the session takes place in a computer laboratory, students decide to sit in small groups on the floor to create an even more relaxed and student-centered atmosphere. It sets up interaction and allows students to discuss freely regarding assigned tasks. In both figures, students are caught in animated participation with the Wordwall activities. They work together to discuss each quiz item, compare ideas, and write their responses on worksheets. Their attentive posture of leaning forward, pointing at the papers, and exchanging explanations testifies that the Wordwall tasks stimulate active participation and group problem-solving.

The teacher can be seen walking around the class, overseeing group discussions and giving assistance where necessary. This fosters a supportive and responsive learning environment in which students are encouraged to ask questions, clarify understanding, and remain engaged with the digital activity. Figure 4 and Figure 5 together provide an exciting and engaging learning environment; Wordwall plays a dual role here, acting both as a digital assessment tool and a stimulus for collaborative learning. These images capture how this mixture of group-based seating, teacher facilitation, and gamified digital tasks creates a meaningful, engaging, and communicative classroom experience.

Observations during the learning showed that students looked enthusiastic and actively answered the quiz questions provided. They competed in giving quick responses, creating a lively, enjoyable, and competitive classroom atmosphere. The results of the observation comparing student activity before and after the implementation of Wordwall are shown in Table 1.

Table 1. Comparison of Student Activeness Before and After Wordwall Implementation

Learning Condition	Active Students	Inactive Students	Activeness Percentage
Before using Wordwall	34	11	75.6%
After using Wordwall	42	3	93.3%

Results here showed that Wordwall significantly enhanced the activeness of students towards Sharia Banking Accounting learning. Before using Wordwall, actively participating students numbered 34 (75.6%), whereas after using Wordwall, active participation increased to 42 students, or 93.3%. Such an increase confirms that Wordwall positively influenced students' engagement and participation during classroom activities by 17.7%.

This corresponds to the principles of Niemiec & Ryan (2009), in that gamified environments foster intrinsic motivation by creating autonomy through choice of answers, competence through scoring success, and relatedness through collaborative discussion. The students' enthusiasm and competition are signals that a shift has been effected from extrinsic to intrinsic motivation-learning is now enjoyable and not an obligation. From a constructivist perspective, as posited by Júnior (2025) and Purnamasari & Purwandari (2025), Wordwall is a mediational tool that scaffolds learning through social interaction. Students co-construct understanding in discussing quiz questions, explaining concepts, and sharing reasons, thereby reinforcing both cognitive and social engagement. This goes in line with the work of Wang & Tasir (2024), who found that gamification enhances learners' higher-order thinking through peer-based interaction. Moreover, the findings support digital transformation frameworks, for example, Normén-Smith et al. (2024), that emphasize the integration of interactive digital tools in developing students' digital competencies toward readiness for AI-driven educational environments. Although Wordwall is not an AI-based tool, its adaptive design of providing instant feedback, time constraints, and user analytics showcases an early form of algorithmic interactivity that reflects AI principles used in personalized learning. These kinds of experiences help both teachers and students get prepared for using even more sophisticated AI-supported instructional systems.

Activeness improved, and this was manifested in a number of observable indicators. First, concerning the answering of questions, before the employment of Wordwall, only about 34 students were willing to answer questions in lessons, but after the integration of the digital quiz into lessons, almost all students answered questions within the given time. The time limit further encouraged quick responses and fostered critical and logical thinking in identifying the correct answers. Second, during the quiz, there was increased interaction among the students as short peer discussions arose when explaining

and clarifying answers. Following the use of Wordwall, students were more inquisitive and initiated more questions about challenging topics than previously, showing the shift from passive reception to active construction of knowledge. Third, the interactive, game-like nature of Wordwall attracted the students and led to improvement in their attention to learning materials. The presence of competition kept them alert in carefully reading the questions and being able to concentrate on the session up to the end. Fourth, participation went beyond the quiz activities; after the use of Wordwall, students were more interested in class discussions, sharing opinions, and working with peers, which created an increase in communication among students and teachers, turning the classroom into a dynamic place. In the last instance, there was growth in enthusiasm and motivation, students expressed exhilaration during the announcement of correct answers, and even after an incorrect response, they remained motivated, which promised the development of an attitude of enjoyment and persistence.

These findings align with the broader theoretical framework of student engagement, which emphasizes behavioral, emotional, and cognitive dimensions as essential factors influencing learning effectiveness. Evidence from prior studies reinforces this alignment. Widhiatama & Brameswari (2024) reported that Wordwall significantly enhances student motivation and active participation in literature classes, positioning gamified quizzes as an “innovative agent” for learning. Similarly, Sappaile et al. (2025) demonstrated that core gamification features such as competition, immediate feedback, and reward systems, substantially elevate intrinsic motivation among undergraduate students.

Additional studies corroborate these outcomes. Maghfiroh (2018) found that Wordwall increases both student activeness and learning achievement, while Putriani & Gunawan (2023) showed that interactive quiz formats effectively stimulate behavioral engagement through responsive participation. Likewise, Syahyadi et al. (2024) observed that gamified platforms such as Wordwall strengthen conceptual understanding by providing repeated exposure and instant corrective feedback, mechanisms central to cognitive engagement.

Taken together, the convergence of these findings with the present study suggests that Wordwall functions not merely as a digital assessment tool but as a theoretically grounded interactive learning strategy capable of fostering deeper cognitive processing, enhancing motivation, and promoting active learning. In the broader context of educational digital transformation, the integration of gamified media also aligns with contemporary models of technology-enhanced learning and contributes to the development of AI-ready learning ecosystems in which interactivity, adaptive feedback, and learner agency are key to achieving 21st-century competencies.

Conclusion

The use of Wordwall in Sharia Banking Accounting classes showed a significant positive effect on student activeness. As an interactive platform combining quizzes and game-based learning, Wordwall increased student engagement beyond the level normally developed by traditional classroom methods. The results indicated that the behavioral indicator of activeness, such as students' enthusiasm in answering questions, participating in discussions, and taking part in collaborative and individual learning activities, improved by 17.7%. Although these are some promising results, there are some limitations that should be recognized. The intervention was conducted in just two classes, which limits the generalizability of the findings of this study. The effective use of Wordwall also depends on stable internet connectivity and the availability of digital devices, creating occasional technical disruptions that constrained learning time and reduced the number of topics covered. Moreover, the short research duration did not allow in-depth analysis concerning long-term sustainability and retention effects. The research adds to the increasing evidence of the effectiveness of gamified digital tools in accounting education, especially concerning Sharia Banking learning. In practice, the results showed how inclusion of Wordwall can be an effective pedagogical approach to enhance classroom engagement, active learning, and students' preparedness for the digital-based assessments used increasingly in professional practice. Future research should be conducted with an enlarged and more diversified participant group to enhance the power of external validity, investigate more Wordwall features or their integration with other interactive tools, and also extend the scope of the variables beyond activeness to include motivation, learning achievement, digital literacy, and collaboration competencies. Longitudinal studies are thus recommended for a fuller evaluation of the sustained effects of these gamified learning tools.

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