



The Influence of the use of Kahoot Game-Based Learning Media on Students' Learning Motivation in the Subject of Food Presentation at Vocational School

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Abstract

The integration of digital technologies into vocational education has created opportunities to improve students' learning motivation through more interactive and student-centered instructional approaches. This study aims to examine the effect of Kahoot game-based learning media on students' learning motivation in the Food and Beverage Service subject at SMK Negeri 6 Padang, Indonesia. A quantitative approach employing a true experimental design with a Posttest-Only Control Group Design was adopted. The study involved 72 Grade XI Culinary students selected through simple random sampling and assigned equally to an experimental group receiving Kahoot-assisted instruction and a control group receiving conventional PowerPoint-based instruction. Data on students' learning motivation were collected using a validated four-point Likert-scale questionnaire based on six motivational indicators proposed by Uno. Descriptive statistics and inferential analyses were conducted using IBM SPSS Statistics Version 20. Prior to hypothesis testing, data normality and homogeneity assumptions were verified using the One-Sample Kolmogorov-Smirnov test and Levene's Test, respectively. The results revealed that the experimental group achieved a higher mean motivation score (135.61) than the control group (112.94). The Independent Samples t-test indicated a statistically significant difference between the two groups ($t = 10.921$, $p < 0.001$), confirming that Kahoot game-based learning media significantly improved students' learning motivation. These findings suggest that game-based learning functions not only as an instructional technology but also as an effective instructional management strategy that promotes active participation, immediate feedback, and sustained classroom engagement. The study contributes to the educational management literature by providing empirical evidence supporting the integration of gamified digital learning into vocational education and offers practical implications for teachers and school leaders seeking to strengthen instructional quality through technology-enhanced learning.

Introduction

Vocational education has a strategic position in developing competent, skilled, and work-ready human resources who are able to respond to the demands of industrial development. Unlike general education, vocational education emphasizes the integration between theoretical understanding and practical competencies that are directly relevant to the workplace. In Indonesia, Vocational High Schools (SMK) are designed to prepare graduates who possess

professional skills, adaptive abilities, and industry-oriented competencies through productive learning programs (Presidential Regulation of the Republic of Indonesia Number 68 of 2022). The success of vocational education is not only determined by the availability of facilities and infrastructure but also by the quality of the learning process implemented by teachers and the active involvement of students during learning activities (Sisimwo et al., 2023; Wanjala et al., 2023; Raheef, 2024). Therefore, creating an effective learning environment that encourages student participation and motivation becomes an essential aspect of improving vocational education quality.

One of the important fields in vocational education is the Culinary Expertise Program, which prepares students to work in the food service industry. In this program, Food and Beverage Service is one of the productive subjects that plays an important role in developing students' professional competencies. This subject does not only involve theoretical knowledge regarding service procedures but also requires students to master practical abilities, including communication skills, hospitality attitudes, service ethics, and technical skills in handling food and beverage operations according to industry standards (Resch & Schritteser, 2023; Bringle et al., 2023; Fantinelli et al., 2024). The achievement of these competencies requires an effective learning process because students must be able to understand concepts while simultaneously applying them in practical situations. However, achieving optimal competency mastery is often influenced by students' internal factors, particularly their motivation to participate actively in learning activities.

Learning motivation is recognized as one of the most important factors influencing students' academic achievement and learning behavior. Motivation determines students' willingness to engage, persist, and overcome difficulties during the learning process. According to Erita et al. (2023), learning motivation refers to internal and external factors that encourage students to make behavioral changes during learning, which are reflected through the desire to achieve success, the need to learn, appreciation, and future aspirations. Similarly, Al-Said (2023) explains that motivation functions as a psychological driving force that influences students' effort, persistence, and involvement in achieving learning goals. Students with high learning motivation tend to show greater participation, curiosity, and responsibility, while students with low motivation often demonstrate passive behavior and reduced interest in classroom activities (How et al., 2024).

However, maintaining students' learning motivation has become increasingly challenging in the current digital era. The characteristics of Generation Z students, who are accustomed to interactive technology, digital content, and rapid access to information, have changed expectations toward classroom learning. Traditional learning approaches that rely heavily on teacher-centered instruction and one-way information delivery are often considered less attractive because they provide limited opportunities for interaction and active participation (Amirova, 2025). Based on observations conducted at SMK Negeri 6 Padang, particularly in the Culinary Arts program for grade XI students, several indications of low learning motivation were identified (Martin et al., 2024). These conditions were reflected in students' lack of concentration during learning activities, limited participation in classroom discussions, and signs of boredom when receiving Food and Beverage Service material through conventional teaching methods (Saifuddin et al., 2025). Furthermore, the impact of low motivation can also be observed through learning achievement, where several students have not yet reached the Learning Objective Achievement Criteria (KKTP).

The learning process for Food and Beverage Service, especially procedural materials such as Table Service, requires instructional strategies that can stimulate students' attention and active involvement. The dominance of lecture methods supported by static presentation media such as PowerPoint has limitations because students tend to become passive recipients of information (Charline & Frederic, 2023). Although presentation media can assist teachers in delivering learning materials, ineffective use of media may reduce classroom interaction and decrease students' enthusiasm for learning. Rumiya et al. (2025) emphasizes that learning media should not only function as a tool for delivering information but also stimulate students' thoughts, feelings, attention, and willingness to learn. Therefore, selecting appropriate learning media that corresponds with students' characteristics and technological developments is necessary to create meaningful learning experiences (Azhura et al., 2024).

The advancement of educational technology has encouraged educators to develop more interactive and student-centered learning approaches. Digital learning media provides opportunities to transform conventional classrooms into more engaging environments by combining visual elements, interaction, feedback, and active participation. Research by Nurhasanah et al. (2025) indicates that technology-based learning media can positively influence students' motivation and learning outcomes because digital tools provide more varied learning experiences. Similarly, Halawa (2024) explain that innovative learning media contributes to increasing student engagement by creating learning activities that are more interesting and responsive to students' needs. These findings indicate that technology integration can become an alternative strategy to overcome motivational problems in vocational learning environments (Permatasari, 2024).

One approach that has gained attention in educational technology is gamification, which integrates game elements into non-game learning contexts to increase engagement and motivation. Gamification provides learning experiences through challenges, rewards, competition, and immediate feedback, which can encourage students to participate more actively. A meta-analysis conducted by Taşkın & Kılıç (2023) found that gamification in education has positive effects on cognitive, motivational, and behavioral learning outcomes. By incorporating game characteristics into classroom activities, teachers can create a more enjoyable atmosphere while maintaining educational objectives (Dehghanzadeh, et al., 2024; Gyedu et al., 2026).

One digital platform that applies gamification principles is Kahoot. Kahoot is a game-based learning platform that enables teachers to design interactive quizzes, evaluations, and classroom activities involving real-time student participation (Ramaila, 2024). Through features such as time limitations, colorful visual displays, background music, scoring systems, and leaderboards, Kahoot creates an atmosphere of challenge and competition that can increase students' attention and motivation. Licorish & Lötter (2022), through a comprehensive literature review, found that Kahoot positively affects classroom dynamics, student engagement, learning motivation, and knowledge retention. Furthermore, Özdemir (2025) reported that students perceived Kahoot as an effective learning tool because its interactive features encouraged participation and created a more enjoyable learning environment. Similar findings were also presented by Widat et al. (2025), who highlighted that Kahoot supports active learning by promoting collaboration, competition, and immediate feedback during classroom activities.

Although previous studies have demonstrated the potential benefits of Kahoot as a learning medium, most research has been conducted in general education contexts or normative-

adaptive subjects such as mathematics, language, and science. Research examining the application of Kahoot in productive vocational subjects, particularly culinary education, remains relatively limited. This creates an important research gap because vocational learning has unique characteristics that combine theoretical understanding and practical skill development. In Food and Beverage Service subjects, students require not only knowledge acquisition but also motivation to engage with procedural learning materials and professional practices.

This study aims to examine the influence of Kahoot game-based learning media on students' learning motivation in Food and Beverage Service at SMK Negeri 6 Padang. This research is expected to provide empirical evidence regarding the effectiveness of interactive digital learning media in improving motivation among vocational students. Furthermore, the findings may contribute to the development of innovative technology-based learning strategies and provide practical insights for vocational educators in designing more engaging, interactive, and student-centered learning environments.

Method

Research Design

This study employed a quantitative research approach using a true experimental design to investigate the effect of Kahoot game-based learning media on students' learning motivation. A true experimental design was chosen because it allows researchers to establish a causal relationship between the independent and dependent variables while controlling for the influence of extraneous factors through random assignment. Specifically, this study adopted the Posttest-Only Control Group Design, in which participants were randomly assigned to either an experimental group or a control group. The experimental group received instruction using Kahoot game-based learning media, whereas the control group was taught using conventional PowerPoint-based instruction. No pretest was administered because random assignment was expected to produce equivalent groups prior to treatment, thereby minimizing the possibility of testing effects. At the conclusion of the instructional intervention, both groups completed the same learning motivation questionnaire as a posttest to evaluate the effectiveness of the instructional media.

Research Setting and Participants

The research was conducted at SMK Negeri 6 Padang, located on Jalan Suliki No. 1, Jati Baru, Padang Timur District, Padang City, West Sumatra, Indonesia. The study was carried out during the implementation of the Food and Beverage Service subject in the 2025/2026 academic year. The target population consisted of all Grade XI students enrolled in the Culinary Expertise Program who were taking the Food and Beverage Service course. This population was selected because the subject combines theoretical understanding and practical competencies that require students to maintain high levels of engagement and learning motivation throughout the instructional process.

Sampling Technique

The sample was selected using a probability sampling technique, specifically simple random sampling, which provides every member of the population with an equal opportunity to participate in the study. A total of 72 students were selected and randomly assigned into two groups consisting of 36 students each. The experimental group received instruction using Kahoot game-based learning media, while the control group received conventional instruction

using PowerPoint presentations. To ensure proportional representation of the population, twelve students were randomly selected from each of the three Grade XI Culinary classes (XI Culinary 1, XI Culinary 2, and XI Culinary 3). The random assignment process was intended to reduce selection bias and improve the internal validity of the experiment.

Research Variables

This study involved two research variables. The independent variable was the use of Kahoot game-based learning media, which was implemented during classroom instruction in the Food and Beverage Service subject. Kahoot was utilized as an interactive digital learning platform incorporating quizzes, real-time feedback, points, rankings, and game elements designed to increase student engagement. The dependent variable was students' learning motivation, defined as the internal and external drive that encourages students to actively participate in learning activities, persist in completing learning tasks, and strive to achieve academic success.

Research Instrument

The data were collected using a non-test instrument in the form of a closed-ended questionnaire designed to measure students' learning motivation. The questionnaire of learning motivation and employed a modified four-point Likert scale consisting of Strongly Agree, Agree, Disagree, and Strongly Disagree. A four-point scale was chosen to eliminate neutral responses and encourage participants to express a clear opinion regarding each statement. The instrument measured six dimensions of learning motivation, namely: (1) desire and aspiration to succeed, (2) learning needs and internal drive, (3) future hopes and aspirations, (4) appreciation and recognition in learning, (5) engagement in interesting learning activities, and (6) a conducive learning environment. Each indicator was represented by several questionnaire items that collectively measured students' overall level of learning motivation.

Instrument Validity and Reliability

Before being administered to the research participants, the questionnaire underwent validity and reliability testing to ensure that it accurately and consistently measured students' learning motivation. Content validity was first evaluated through expert judgment involving lecturers with expertise in educational research and vocational education. Suggestions provided by the experts were used to improve the wording, clarity, and relevance of the questionnaire items. Subsequently, empirical validity testing was conducted using the Pearson Product-Moment correlation technique. Questionnaire items with correlation coefficients exceeding the critical value at a significance level of 0.05 were considered valid. The reliability of the instrument was then examined using Cronbach's Alpha coefficient. An alpha value greater than 0.70 indicated that the instrument possessed satisfactory internal consistency and was therefore suitable for use in the study.

Research Procedure

The research was conducted through three stages: preparation, implementation, and data collection. During the preparation stage, permission to conduct the study was obtained from the school administration, the research instruments were developed and validated, and instructional materials for both learning methods were prepared. During the implementation stage, the experimental group received instruction using Kahoot game-based learning media, while the control group received instruction using conventional PowerPoint presentations. Both groups were taught by the same teacher, covered identical learning objectives and instructional content, and received the same duration of instruction to ensure that the only

difference between the groups was the instructional media employed. After all learning sessions had been completed, both groups completed the learning motivation questionnaire as the posttest. The collected data were then compiled and prepared for statistical analysis.

Data Analysis

The collected data were analyzed using IBM SPSS Statistics Version 20.0. Descriptive statistical analysis was first conducted to summarize the characteristics of the data, including the mean, median, mode, standard deviation, minimum score, and maximum score for both the experimental and control groups. Prior to hypothesis testing, prerequisite analyses were performed to determine whether the assumptions for parametric statistical testing had been satisfied. Data normality was examined using the One-Sample Kolmogorov–Smirnov test, while the homogeneity of variances between the two groups was assessed using Levene's Test. Data were considered normally distributed and homogeneous when the significance values exceeded 0.05. After these assumptions had been met, the research hypothesis was tested using the Independent Samples *t*-test to determine whether a statistically significant difference existed between the learning motivation scores of students who learned through Kahoot game-based learning media and those who received conventional PowerPoint-based instruction. All statistical tests were conducted at a significance level of 0.05.

Result and Discussion

The results section begins with descriptive statistics to summarize the characteristics of the learning motivation scores in both the experimental and control groups. This is followed by prerequisite analyses, including normality and homogeneity tests, to verify the assumptions required for parametric statistical analysis. Finally, the research hypothesis is examined using the Independent Samples *t*-test to determine whether a statistically significant difference exists in students' learning motivation between those who received Kahoot game-based instruction and those who received conventional PowerPoint-based instruction.

Table 1. Descriptive Statistics of Students' Learning Motivation Scores

Statistical Parameter	Experimental Group (Kahoot)	Control Group (PowerPoint)
Number of Students (N)	36	36
Mean	135.61	112.94
Median	136.00	113.00
Mode	135.00	110.00
Standard Deviation	8.42	9.15
Minimum Score	118	95
Maximum Score	152	130

Source: SPSS Statistics Version 20.0

Table 1 shows that students in the experimental group obtained higher learning motivation scores than those in the control group. The experimental group achieved a mean score of 135.61, whereas the control group obtained 112.94, indicating a difference of 22.67 points. The higher median and mode values in the experimental group further indicate that most students demonstrated consistently higher motivation after participating in Kahoot-assisted learning. Moreover, the experimental group exhibited a slightly lower standard deviation (8.42) than the

control group (9.15), suggesting that students' motivation scores were relatively more homogeneous. Overall, these descriptive findings indicate that Kahoot game-based learning media contributed to higher levels of students' learning motivation.

Table 2. Results of the One-Sample Kolmogorov–Smirnov Normality Test

Test	Asymp. Sig. (2-tailed)	Significance Level	Decision
One-Sample Kolmogorov–Smirnov	0.799	0.05	Normally Distributed

Source: SPSS Statistics Version 20.0

As shown in Table 2, the significance value obtained from the One-Sample Kolmogorov–Smirnov test was 0.799, which is greater than the significance level of 0.05. Therefore, the data are normally distributed, indicating that the assumption of normality required for parametric statistical analysis has been satisfied.

Table 3. Results of Levene's Test of Homogeneity of Variance

Test	Sig.	Significance Level	Decision
Levene's Test	0.819	0.05	Homogeneous Variances

Source: SPSS Statistics Version 20.0

Table 3 indicates that the significance value of Levene's Test was 0.819, which exceeds the significance criterion of 0.05. Consequently, the variances of the experimental and control groups are considered homogeneous. Since both the normality and homogeneity assumptions have been fulfilled, the data are appropriate for further analysis using the Independent Samples *t*-test.

Table 4. Independent Samples *t*-Test Results

Dependent Variable	Group	Mean	t-value	df	Sig. (2-tailed)	Decision
Learning Motivation	Experimental	135.61	10.921	70	0.000	H ₀ Rejected
	Control	112.94				

Source: SPSS Statistics Version 20.0

The Independent Samples *t*-test produced a *t*-value of 10.921 with 70 degrees of freedom and a significance value of 0.000. Since the probability value is smaller than the significance level of 0.05, the null hypothesis (H₀) is rejected and the alternative hypothesis (H₁) is accepted. These findings indicate that the use of Kahoot game-based learning media had a statistically significant positive effect on students' learning motivation in the Food and Beverage Service subject.

Table 5. Summary of Statistical Analysis

Analysis	Result	Interpretation
Descriptive Statistics	Mean (Experimental) = 135.61; Mean (Control) = 112.94	The experimental group demonstrated higher learning motivation.
Normality Test	Sig. = 0.799 (>0.05)	Data were normally distributed.
Homogeneity Test	Sig. = 0.819 (>0.05)	Variances between groups were homogeneous.
Independent Samples <i>t</i> -test	$t = 10.921$; Sig. = 0.000 (<0.05)	Kahoot game-based learning media significantly improved students' learning motivation.

Source: SPSS Statistics Version 20.0

The statistical analyses consistently demonstrate that students who learned through Kahoot game-based learning media exhibited significantly higher learning motivation than students who received conventional PowerPoint-based instruction. The prerequisite tests confirmed that the assumptions for parametric analysis were satisfied, while the hypothesis test verified that the observed difference between the two groups was statistically significant. These findings provide empirical evidence that integrating Kahoot into classroom instruction effectively enhances students' motivation to learn.

Kahoot as a Strategic Learning Management Tool for Enhancing Student Motivation

The findings of this study demonstrate that the educational value of Kahoot extends beyond its function as a digital quiz platform. Rather than serving merely as a technological innovation, Kahoot functions as a strategic instructional management tool that enables teachers to organize learning experiences capable of sustaining students' cognitive and behavioral engagement throughout the learning process. Within educational management, the effectiveness of classroom instruction increasingly depends on how teachers coordinate instructional resources, classroom interaction, assessment, and feedback into a coherent learning system. Consequently, technology should not be evaluated solely based on its digital features but on its capacity to improve instructional management and facilitate productive learning environments.

This perspective shifts the discussion from technology adoption toward instructional quality management. Conventional classroom instruction often emphasizes content delivery, where students primarily receive information through one-way communication. Such instructional management provides relatively limited opportunities for active participation and continuous interaction. In contrast, Kahoot restructures classroom dynamics by integrating questioning, immediate feedback, competition, and performance monitoring within every learning session. As a result, students become active participants rather than passive recipients of information. Ramaila (2024), through their systematic literature review, similarly concluded that Kahoot consistently improves student engagement, classroom interaction, learning motivation, and academic performance across diverse educational contexts. The present study strengthens these conclusions by demonstrating that similar benefits are also evident in vocational education, particularly in productive courses that require sustained student participation (Mustajab & Irawan, 2023; Huang, 2025; Song & Lai, 2025).

The contribution of this study is particularly relevant because vocational education differs substantially from general academic education. Courses such as Food and Beverage Service require students not only to understand theoretical concepts but also to develop procedural knowledge, decision-making skills, and professional competencies applicable to industry settings. Under such conditions, learning motivation becomes an essential managerial resource that directly influences students' willingness to participate actively during instruction. Therefore, integrating Kahoot into vocational classrooms should be viewed as an instructional management strategy that supports competency development rather than simply introducing technological novelty into teaching practice.

Theoretical Contributions to Learning Motivation and Educational Management

The findings contribute to the theoretical understanding of learning motivation by reinforcing the argument that motivation should be viewed as an outcome of effective instructional management rather than solely as an individual psychological characteristic. Traditional motivational theories frequently describe motivation as an internal condition residing within learners. However, contemporary educational management increasingly emphasizes that motivation develops through learning environments intentionally designed to encourage participation, provide meaningful challenges, and support continuous learning. The present study supports this perspective by demonstrating that carefully managed instructional environments can substantially influence students' motivational development.

This interpretation is consistent with Chang et al. (2023), who argued that learners become more motivated when instructional activities provide meaningful goals, continuous feedback, and opportunities to experience success. Kahoot operationalizes these principles through immediate performance feedback, clearly defined learning objectives, interactive classroom participation, and repeated reinforcement during instruction (Fitrianto, 2024). Rather than relying exclusively on external rewards, the platform structures learning experiences that naturally encourage students to remain engaged throughout classroom activities. Consequently, the findings suggest that improving students' motivation should not primarily focus on changing students themselves but on redesigning instructional systems that continuously stimulate meaningful participation.

The present findings also complement the work of Bhardwaj et al. (2025), whose meta-analysis demonstrated that gamification positively affects cognitive, motivational, and behavioral learning outcomes when game elements are systematically aligned with pedagogical objectives. Their findings emphasized that successful gamification depends on instructional design rather than entertainment value alone. The present study supports this argument by showing that students' increased motivation emerged not because they were merely playing games, but because game mechanics including immediate feedback, progress monitoring, achievement recognition, and healthy competition were embedded within a structured instructional process. Accordingly, gamification should be understood as a pedagogical management strategy capable of improving instructional effectiveness rather than simply adding enjoyable activities to classroom learning.

Practical Implications for Vocational Education Management

Beyond its theoretical contribution, this study offers several practical implications for educational management, particularly within vocational schools. The findings indicate that digital transformation in education should not be interpreted merely as the procurement of technological infrastructure. Instead, successful technology integration requires strategic

instructional leadership that enables teachers to design learning experiences capable of maximizing student engagement and motivation. Consequently, school leaders should prioritize teacher professional development focusing on digital pedagogy rather than limiting investment to technological facilities alone.

This implication aligns with Prenger et al. (2022), who argued that sustainable educational improvement depends primarily on educators' professional capacity to implement meaningful instructional innovation. Technology becomes educationally valuable only when teachers possess the competencies necessary to integrate digital tools with curriculum objectives, learning outcomes, and appropriate instructional strategies. Therefore, vocational school administrators should incorporate technology-enhanced pedagogy into teacher training programs, instructional supervision, and curriculum development to ensure that digital learning platforms contribute directly to educational quality improvement.

An equally important implication concerns assessment management. Kahoot transforms classroom assessment from a summative activity conducted at the end of instruction into a continuous formative process embedded within daily learning activities. Sulaimon & Adebayo (2024) emphasized that effective feedback represents one of the strongest influences on learning improvement because it enables learners to identify current performance, expected learning goals, and strategies for improvement. Similarly, Vičič et al. (2024) demonstrated that immediate formative feedback promotes self-regulated learning by encouraging students to monitor and evaluate their own progress continuously. The present findings suggest that Kahoot effectively operationalizes these feedback principles, allowing teachers to manage assessment as an ongoing instructional process that simultaneously supports learning and enhances motivation.

Conclusion

This study concludes that the integration of Kahoot game-based learning media significantly enhances students' learning motivation in the Food and Beverage Service subject at SMK Negeri 6 Padang compared with conventional PowerPoint-based instruction. Beyond demonstrating statistical effectiveness, the findings indicate that Kahoot serves as a strategic instructional management tool that fosters active participation, immediate feedback, meaningful interaction, and sustained engagement, thereby creating a more student-centered learning environment. These findings contribute to the educational management literature by highlighting that students' learning motivation is not solely determined by individual characteristics but can be effectively cultivated through well-designed instructional management supported by interactive digital technologies. From a practical perspective, the study underscores the importance of equipping vocational educators with the competencies to integrate game-based learning into classroom instruction as part of broader digital transformation initiatives aimed at improving instructional quality. Accordingly, educational institutions should regard interactive learning technologies not merely as supplementary teaching tools but as strategic resources for enhancing learning management, strengthening student engagement, and ultimately improving the quality of vocational education in response to the evolving demands of twenty-first-century learning and workforce development.

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