PjBL with Kahoot Media on Grade X Students' Biology Interest at SMAN 1 Wundulako

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Abstract

Learning at SMAN 1 Wundulako remains centered on lectures and textbooks. Although media such as PowerPoint and Canva have been used, their utilization has not been optimal. As a result, students tend to be passive and show low learning interest. Therefore, there is a need for innovative learning models and interactive media to enhance students' interest in learning. This study aims to examine the effect of implementing Project-Based Learning assisted by Kahoot media on students' learning interest in biology. The research employed a quantitative approach with a quasi-experimental method. The research design used was a posttest-only control group design. Instruments used to measure students' learning interest included questionnaires and interview sheets. Data were analyzed using a parametric test, namely the independent sample t-test, at a significance level of 0.05. The results of the hypothesis testing indicate a significant effect of Project-Based Learning assisted by Kahoot media on students' learning interest in biology among Grade X students at SMAN 1 Wundulako. It can be concluded that the implementation of Project-Based Learning supported by Kahoot media can help improve students' interest in learning biology in Grade X at SMAN 1 Wundulako.

Keywords: Learning Interest, Project-Based Learning, Kahoot-Assisted Media

A. Introduction

The 21st century is marked by rapid advancements in technology and information across various aspects of life, including education. In the field of education, the utilization of technology offers several positive impacts. Every innovation is expected to contribute to improving the quality of education (Hidayah et al., 2023). Educational quality refers to the standard or measure of how effective the process of shaping attitudes and behaviors is in maturing individuals and

groups. In this context, teachers are expected to utilize and adapt to technological developments in the 21st century.

Education is considered to be of high quality when it creates an active, creative, and enjoyable learning atmosphere. One of the teacher's roles in enhancing the quality of education is by using appropriate learning media and instructional models that can develop students' potential, knowledge, and communication skills (Siahaan et al., 2023). A learning model involves selecting strategies and designing structured methods, skills, and student activities. A key characteristic of a learning model is the presence of structured stages or syntax. Learning models can influence students' interest because they help students better understand the material and actively engage in the learning process (Purnomo et al., 2022).

In addition to learning models, instructional media also play a crucial role in increasing students' learning interest. Learning media are tools that teachers use to convey information to students in a way that is easier to understand. Attractive media can positively influence students' interest by stimulating curiosity and aligning perceptions among students regarding the presented information (Wulandari et al., 2023).

Based on interviews and observations at SMAN 1 Wundulako, it was found that students' learning interest remains low. Interviews with teachers revealed that the dominant method used is lecture-based, with reliance on textbooks. While PowerPoint and Canva are occasionally used, their application is not optimized. Teachers tend to rely heavily on textbooks, resulting in passive learning, where students mainly listen and take notes, with minimal engagement or enthusiasm.

Observations conducted in Grade X classes at SMAN 1 Wundulako showed that students were mostly listening and taking notes during lessons. During class discussions, students rarely volunteered to answer questions unless directly asked by the teacher. This teacher-centered approach and lack of interactive media contributed to the low learning interest. A learning interest questionnaire distributed to the students showed that interest levels averaged 62%, which is considered low.

According to Fitriana (2023), the use of the Project-Based Learning (PjBL) model integrated with Kahoot media can make classroom learning more engaging, interactive, and conducive, thereby improving students' interest, collaboration, and communication skills. Enjoyable learning is a key factor in motivating students to enhance their knowledge and skills.

Nababan et al. (2023) state that Project-Based Learning assisted by Kahoot offers opportunities for student-centered learning. It promotes collaboration, encourages students to actively complete projects independently or in teams, and integrates real-world and practical problem-solving.

In light of the above problems, there is a need for innovation in learning models and media to increase students' learning interest. In this regard, implementing the Project-Based Learning model assisted by Kahoot media can be a strategic effort to enhance students' engagement and interest in the classroom.

B. Literature Review

1. Project-Based Learning Model

A learning model serves as a guideline for organizing learning activities. In applying a learning model, teachers utilize a combination of approaches, strategies, methods, techniques, and tactics to support the instructional process (Salhuteru et al., 2023).

A learning model represents a comprehensive and complex instructional framework, incorporating various essential approaches and methods. It consists of an interconnected system of methods, techniques, and procedures (Yusuf, 2019).

Project-Based Learning (PjBL) is an instructional approach that provides students with the autonomy to plan their learning activities, collaborate on projects, and produce a final product that can be presented to others (Arifianti, 2020). This model promotes innovative, student-centered learning in which teachers act as facilitators and motivators. Students are allowed to work independently and construct their understanding throughout the project (Setyawan et al., 2019).

PjBL emphasizes contextual learning through complex activities. In this model, students are expected to choose topics and projects, produce final products, and solve real-world problems by integrating various disciplines (Purnomo et al., 2022).

According to Fadillah (2022), the PjBL model has several defining characteristics. These include student autonomy in decision-making and framework design, the presentation of a problem or challenge to be solved, collaborative information processing, continuous evaluation, regular reflection by students on their learning activities, assessment of the final product, and a tolerant learning environment that encourages flexibility and adaptation.

2. Kahoot Media

Instructional media can be defined as both physical and non-physical tools used as intermediaries between educators and learners to facilitate more effective and efficient understanding of learning materials, thereby increasing students' motivation to engage in learning (Mooduto et al., 2022).

Kahoot is an online educational platform that features interactive quizzes and games. It is categorized as an interactive learning tool due to its versatility in use, such as for pre-tests, post-tests, practice quizzes, material reinforcement, remedial sessions, and enrichment activities. Kahoot offers four main features: games, quizzes, discussions, and surveys. In the game format, teachers can design questions, set answers, and determine response times (Bahar et al., 2020).

The Kahoot interface is visually appealing, often using vibrant colors that attract students' attention. These engaging visuals can create a strong, realistic impression and enhance the learning atmosphere. Kahoot not only improves student perception but also strengthens their cognitive engagement, thereby enhancing learning outcomes and knowledge retention (Mukhlis, 2020).

3. Interest in Learning

Interest refers to an individual's inclination or desire toward a particular field (Saifuddin, 2020). Learning interest, therefore, is the feeling of enjoyment or attraction toward learning activities without external compulsion (Ricardo & Meilani, 2017).

Learning interest serves as a motivational factor that drives students to engage in academic activities. Indicators of learning interest include enjoyment and curiosity, active participation, focused attention, positive emotions, increased willingness to learn, comfort during the learning process, and decision-making related to learning tasks (Ricardo & Meilani, 2017).

According to Mahdalena (2022), characteristics of learning interest include its development alongside mental and physical growth, dependence on learning activities, limited potential for growth, influence by learning opportunities, cultural impact, and its emotionally driven nature.

For students, learning interest is a key determinant of academic success. Students with a strong interest are more likely to exert effort in understanding the material, leading to better learning outcomes. Conversely, a lack of interest may delay or prevent academic success (Setiawan & Danny, 2021). Various factors influence learning interest, which can be categorized as internal—such as physical and psychological conditions—and external, including social and environmental factors such as room temperature, facilities, and infrastructure.

C. Methodology

1. Research Design

This study employed a posttest-only control group design. The research involved two classes: an experimental group and a control group, to identify the effect of implementing Project-Based Learning (PjBL) assisted by Kahoot media on students' learning interest. The experimental class received treatment using the PjBL model integrated with Kahoot media, while the control class was taught using conventional instructional methods.

Table 1. Research Design

Group	Treatment	Questionnaire Sheet	Interview Sheet
Eksperimen	X	P_1	P_2
Kontrol	Z	P_3	P_4

Information:

E = Experimental Group

K = Control Group

X = Treatment with a *project-based learning model* assisted by Kahoot media.

Z = Conventional Learning

P_1 = Giving questionnaires to the experimental class

P_2 = Distribution of interview sheets to the experimental class.

P_3 = Giving questionnaires to the control class

P_4 = Providing interview sheets to the control class

2. Instruments

Research instruments are tools used to measure variables and achieve the study's objectives. Instruments must be objective and reliable (Sugiyono, 2019). In this study, the instruments consisted of a questionnaire and an interview sheet. The questionnaire was used to assess students' learning interest after receiving instruction through Project-Based Learning assisted by Kahoot media. The interview sheet was used to collect more in-depth information regarding students' learning interests, using indicators such as enjoyment, attention, involvement, and engagement with the subject matter.

The questionnaire included 20 items, comprising 12 positive statements and 8 negative statements, and was analyzed using a Likert scale. Each statement offered five response options: Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD).

3. Technique of Data Analysis

This research utilized quantitative data, which were analyzed through descriptive and inferential statistical methods. Then, inferential tests were conducted using normality tests, homogeneity tests, and hypothesis testing.

The normality test was conducted using the Shapiro-Wilk method. If the Shapiro-Wilk significance value is greater than 0.05, the data distribution is considered normal. If the value is less than 0.05, the data distribution is considered non-normal. The test was performed using SPSS version 27.

The homogeneity test was used to determine whether the sample groups originated from populations with equal variances. This test applied Levene's Test for Equality of Variances. The data are considered homogeneous if the significance value is greater than 0.05.

Hypothesis testing is conducted after testing the data population using normality and homogeneity tests. If the population data is normally distributed and the population is homogeneously distributed, then hypothesis testing is carried out using the t-test or the *Independent Sample T-Test*. at the α level = 0.05. The calculations in this study used SPSS 27. The significance is 0.05.

D. Findings and Discussion

1. Findings

The analysis in this study includes descriptive statistics of students' learning interest in Class X-C (experimental group) and Class X-F (control group), as well as inferential statistics consisting of the homogeneity test, normality test, and hypothesis testing. The results of the descriptive analysis of learning interest in the control class and the experimental class using a questionnaire with 20 statements are presented in Table 1.

Table 1. Descriptive Analysis of Learning Interest Data

Data	Learning Interest in Control Class	Experimental Class Learning Interests
Number of Students	30	30
Mean	46,1	83,7
Median	46	83
The highest score	55	100
Lowest Value	38	70
Percentage	46%	84%
Percentage Category	Very Low	High

Based on Table 1, the control class had a mean score of 46.1 and a median of 46, while the experimental class had a mean score of 83.7 and a median of 83. The highest and lowest scores in the control group were 55 and 38, respectively, while in the experimental group, they were 100 and 70. The percentage of learning interest in the control group was 46% (categorized as very low), whereas the experimental group reached 84% (classified as high). These results suggest that students in the experimental group demonstrated significantly higher learning interest compared to those in the control group.

The results of the analysis of each learning interest indicator are as follows:
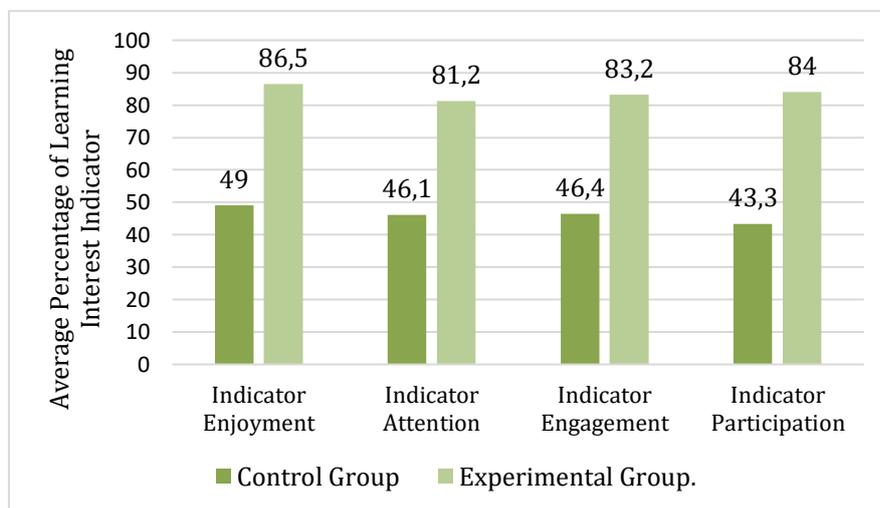
Figure 1. Results of Learning Interest Indicator Analysis

Based on Figure 1, the results of the analysis of each indicator of student learning interest, namely in indicator 1 (feeling of pleasure), students who are interested in learning will feel happy and not bored learning it, so it has an impact on their understanding. If students feel pleasure toward a particular learning activity, they will not feel forced to learn. The percentage score for the indicator of pleasure in the experimental class is higher, namely 86%, compared to 49% in the control class. Furthermore, in indicator 2 (attention), student attention is the student's concentration on learning. The results of the percentage analysis on the attention indicator in the experimental class are 81.2, while in the control class, it is 46.1. In indicator 3 (interest), interest is related to students' attraction to an activity in the form of an effective experience stimulated by the activity itself, and the percentage results obtained in the experimental class are 83.2 and the control class 46.4. Then, in indicator 4 (involvement), students play an active role as participants in the learning process. The percentage results obtained in the experimental class are 84, and the experimental class is 43.3. Based on the description of the learning interest indicators in Table 1, it is known that the highest percentage is found in the indicator of feelings of pleasure. This is due to students' enjoyment and positive responses toward the learning process, which makes them feel less forced to learn.

The purpose of conducting a normality test is to determine whether the data obtained from each variable analyzed follows a normal distribution pattern or not.

Table 2. Normality Test of Learning Interest in the Control Class and Experimental Class.

Shapiro-Wilk			
	Statistics	Df	Sig.
Interest in Experimental Learning	.967	30	.450
Interest in Learning Control	.977	30	.748

Table 2 shows the results of the normality test output of the learning interest and communication skills of students in the control class and the experimental class using the Shapiro-Wilk test showing a significant value of the learning interest of students in the experimental class of 0.450 while the learning interest of students in the control class is 0.748 and the significance value of the communication skills of students in the experimental class is 0.377 and the significance of students in the control class is 0.378. These data show that the data in the experimental class and the control class have a normal distribution of data.

Table 3. Homogeneity Test of Learning Interest in the Control Class and Experimental Class

		Levene Statistics	df1	df2	Sig.
Interest in Learning	Based on the Mean	34,047	5	174	.621
	Based on the Median	32,363	5	174	.000
	Based on Median with adjusted df	32,362	5	55,937	.000
	Based on the trimmed mean	33,662	5	174	.000

Table 3 shows the output of the homogeneity of variance test using Levene's test, which indicates a significance value of 0.621. Since the significance value is greater than 0.05, it can be concluded that learning interest and communication skills have equal variances, meaning that the data for both variables are homogeneous.

Table 4: Hypothesis Test of Learning Interest in Control Class and Experimental Class

								95% Confidence Interval Difference	
		F	sig	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
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Interest in Learning	Equal Variances assumed	10.993	.52	11.341	58	.000	5.136	1.601	2.325	6.795
	Equal variances not assumed			11.341	45.455	.000	5.136	1.601	2.324	6.776

The significance value (2-tailed) for learning interest was 0.000, which is less than 0.05. Therefore, the null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted. This confirms that there is a significant difference in learning interest between the experimental and control groups. Thus, the implementation of Project-Based Learning assisted by Kahoot media has a significant effect on students' learning interest.

2. Discussion

Learning interest is characterized by four key indicators: enjoyment, attention, engagement, and participation. In terms of enjoyment, students in the experimental class scored an average of 86.5 (categorized as high), compared to 49 in the control class (very low). The PjBL model, by engaging students in solving real-world problems, combined with the interactive features of Kahoot, created a more enjoyable and meaningful learning experience. This environment facilitated deeper understanding and enhanced motivation.

Regarding attention, the experimental class averaged 81.2, while the control group averaged 46.1. Students were more attentive when involved directly in hands-on, collaborative activities. These findings align with Iman et al. (2021), who reported a high focus score of 3.89 (very good) when using Kahoot in learning.

For engagement, the experimental group scored 83.2 compared to 46.4 in the control group. The PJBL model enabled students to take ownership of their learning through activities that are contextual and relevant to real life. In this study, Kahoot was used during concept explanations and evaluation sessions, especially when distinguishing between conventional and modern biotechnology. Students showed enthusiasm when participating in peer-based interactive quizzes.

In terms of participation, the experimental class scored 84, while the control group scored 43.3. Students were required to identify problems, analyze situations, and propose solutions. For instance, they created biotechnological products such as tempeh and fermented rice as part of the project. This hands-on involvement fostered higher engagement and participation.

The hypothesis testing results confirmed a significant effect of the intervention, with the experimental class scoring an average of 83.7 compared to 46.1 in the control group. These results indicate that students exposed to Project-Based Learning assisted by Kahoot demonstrated significantly greater interest in learning.

This finding is consistent with studies by Faslia et al. (2023) and Imam et al. (2021), which found that Kahoot increased student involvement and motivation. Similarly, Kusumaningrum (2021) reported that the use of Kahoot positively impacted students' learning interest by making learning more enjoyable and stimulating.

E. Conclusion

The results of this study demonstrate that the implementation of Project-Based Learning (PjBL) assisted by Kahoot media significantly influences the learning interest of Grade X students at SMAN 1 Wundulako. The average learning interest score in the experimental class, which received instruction through the PjBL model with Kahoot, was 83.7, whereas the control class, which followed a conventional learning approach, scored an average of 45.96. This difference highlights the effectiveness of integrating project-based learning with interactive digital tools such as Kahoot in fostering students' engagement and interest.

The PjBL model emphasizes active student involvement, problem-solving, and collaboration. When supported by engaging media like Kahoot, the learning environment becomes more dynamic and enjoyable, making it easier for students to comprehend and retain the material. This research affirms that innovative teaching strategies that integrate technology and student-centered models can significantly enhance the quality of the learning experience and improve student motivation.

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