

The Effect of KOKAMI Learning Media on Grade IX Students' Interest and Learning Outcomes in the Plant Reproduction Topic

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ABSTRAK

Penelitian ini bertujuan (1) mengetahui minat belajar siswa yang diajar tanpa menggunakan media pembelajaran KOKAMI materi sistem perkembangbiakan pada tumbuhan kelas IX SMPN 4 Sinjai; (2) mengetahui hasil belajar siswa yang diajar tanpa menggunakan media pembelajaran KOKAMI materi sistem perkembangbiakan pada tumbuhan kelas IX SMPN 4 Sinjai; (3) mengetahui minat belajar siswa yang diajar dengan menggunakan media pembelajaran KOKAMI materi sistem perkembangbiakan pada tumbuhan kelas IX SMPN 4 Sinjai; (4) mengetahui hasil belajar siswa yang diajar dengan menggunakan media pembelajaran KOKAMI materi sistem perkembangbiakan pada tumbuhan kelas IX SMPN 4 Sinjai; (5) mengetahui pengaruh media KOKAMI terhadap minat belajar siswa materi sistem perkembangbiakan pada tumbuhan kelas IX SMPN 4 Sinjai; (6) mengetahui pengaruh media KOKAMI terhadap hasil belajar siswa materi sistem perkembangbiakan pada tumbuhan kelas IX SMPN 4 Sinjai. Penelitian Quasi Experiment menggunakan desain true eksperimental design. terdapat pengaruh penggunaan media pembelajaran KOKAMI terhadap minat belajar dan hasil belajar siswa materi sistem perkembangbiakan pada tumbuhan kelas IX SMPN 4 Sinjai.

ABSTRACT

This study aimed to: (1) determine the learning interest of Grade IX students at Public Junior High School 4 Sinjai who were taught the topic of plant reproductive systems without KOKAMI instructional media; (2) determine the learning outcomes of students taught the same topic without KOKAMI instructional media; (3) determine the learning interest of students taught the topic using KOKAMI instructional media; (4) determine the learning outcomes of students taught the topic using KOKAMI instructional media; (5) examine the effect of KOKAMI instructional media on students' learning interest in the topic of plant reproductive systems; and (6) examine the effect of KOKAMI instructional media on students' learning outcomes in the same topic. This quasi-experimental study employed a true experimental design. The findings indicated that the use of KOKAMI instructional media affected students' learning interest and learning outcomes in the topic of plant reproductive systems at Public Junior High School 4 Sinjai.

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Introduction

Instructional media play an important role in education because they can make learning more time-efficient and simplify the presentation of new or unfamiliar material. The success of using

instructional media depends on careful planning and selection. One option is KOKAMI (Kotak Kartu Misterius, or Mysterious Box of Cards) (Rina P. Utami, 2017).

KOKAMI combines instructional cards with a language game. It is described as “mysterious” because the cards are placed in envelopes and then put inside a box, so students do not know their contents in advance. The cards may contain learning materials, questions, images, commands, clues, rewards, or penalties. The activity involves all students, including those who are usually less active, making it suitable for heterogeneous classes. In addition to presenting knowledge in an engaging and memorable way, KOKAMI is intended to stimulate students’ interest and attention and reduce boredom. It can therefore serve as an alternative medium for classroom instruction (Neneng Paisah et al., 2013).

Instructional media can help attract student’s attention and support their engagement in learning activities. KOKAMI specifically combines a box of cards with game-based activities; the cards may contain content, questions, images, or instructions. Maslikan (2018) reported increased student activity and learning mastery following the use of KOKAMI. Khotijah and Syuhda (2021) also found differences in student activity between a group using KOKAMI and a control group. These findings support examining KOKAMI in relation to different subject matter and learning outcomes. In school, teachers need to make sustained efforts to promote student’s interest in learning. Interest is one of the factors that can substantially influence academic achievement. Students with high learning interest tend to achieve better results. Interest grows from a desire to know and understand; this desire directs and sustains student’s engagement with learning (Achru, 2019).

Interest plays an important role in learning because it motivates students to study. Interested students tend to persist, whereas students who receive instruction without feeling interested may lack the internal motivation to continue learning diligently. One way to improve learning outcomes is to select appropriate instructional media that can support students’ competencies and abilities. KOKAMI may positively affect learning because it can make students’ experience of instruction more enjoyable and focus their attention on the lesson (Kristina Mudali Marga et al., 2018). Learning interest is related to student’s attention, engagement, and learning processes. Harackiewicz, Smith, and Priniski (2016) explain that interest can promote attention and engagement in learning, while a meta-analysis by Ili et al. (2021) found a positive association between learning interest and mathematics achievement. Although that meta-analysis focused on mathematics, its findings support the importance of examining learning interest as an aspect of learning.

Learning outcomes refer to changes that occur in a person after learning, such as moving from not knowing to knowing or from not understanding to understanding. These outcomes

become apparent after a person has had a learning experience. Changes resulting from instruction may take various forms, including knowledge, skills, behaviour, and attitudes. The use of instructional media may also improve student's achievement (Yuli Rusiana, 2014). KOKAMI may help address these issues. Its engaging format combines learning media with game-based activities, which may increase student's interest, make lessons more active, stimulate critical, creative, and innovative thinking, and improve learning outcomes. The use of KOKAMI is expected to engage students and increase their interest in science, particularly in the topic of plant reproduction (Siti Fatima N. et al., 2021).

Previous studies have examined KOKAMI in different contexts and in relation to different outcomes. Paisah et al. (2013) used it to improve critical-thinking skills, while Marga et al. (2018) examined students critical-thinking skills and motivation. Nuralisa et al. (2021) developed KOKAMI to support cognitive learning outcomes in a unit on environmental conservation, whereas Siahaan et al. (2023) investigated learning interest in the human musculoskeletal system topic. These studies show that KOKAMI has been used to support various aspects of learning, although the subject matter and outcomes examined differ. Among the studies cited in this article, none appears to have examined learning interest and learning outcomes simultaneously in the plant reproductive system topic among Grade IX students. This study therefore examines KOKAMI in that context by comparing a class using KOKAMI with a class learning without it. Its contribution lies in examining both outcomes simultaneously for the specified topic and grade level.

Based on this rationale, the study addressed two questions: (1) Is there a difference in learning interest between students taught using KOKAMI and those taught without KOKAMI? and (2) is there a difference in learning outcomes between the two groups in the plant reproductive system topic? Accordingly, this study aimed to analyse differences in learning interest and learning outcomes between students taught using KOKAMI and those taught without KOKAMI in the plant reproductive system topic.

Methodology

This study employed a quantitative approach using a quasi-experimental method and a nonequivalent control group design. A quasi-experimental design was used because the study was conducted in pre-existing classes, and students were not randomly assigned individually to the experimental and control groups. The comparison-group design enabled outcomes in the two classes to be compared after the intervention, while acknowledging the limited control over pre-existing differences between groups (Campbell & Stanley, 1963). The study was conducted at Public Junior High School 4 Sinjai, Sinjai Regency. The population comprised all 107 Grade IX students at Public Junior High School 4 Sinjai, distributed across four classes. The sample consisted of 52

students: 26 students in Class IX A, which served as the control group, and 26 students in Class IX B, which served as the experimental group. These classes were selected because their prior knowledge levels were considered comparable. This judgment was based on an interview with the Grade IX science teacher on February 21, 2023, which indicated that the mean scores for Classes IX A and IX B were 81 and 80, respectively. Because the thesis does not provide a detailed account of any class-selection lottery, the sampling technique should be reported according to the procedure actually followed; the information available supports describing the selection as purposive, based on the classes' comparable baseline achievement.

Results and Discussion

Normality testing was conducted to determine whether learning-interest data for the experimental and control classes were normally distributed, using the criterion $\text{Sig.} > \alpha$. The normality test results are presented in Table 1.

Table 1
Normality Test of Students' Learning Interest

Variable	Sig.	α	Interpretation
Pretest Learning Interest, Class IX A	0.149	0.05	Normal
Posttest Learning Interest, Class IX A	0.322	0.05	Normal
Pretest Learning Interest, Class IX B	0.122	0.05	Normal
Posttest Learning Interest, Class IX B	0.791	0.05	Normal

The Shapiro-Wilk test was conducted using Statistical Product and Service Solutions (SPSS), version 21. For the experimental group (Class IX B), which was taught using KOKAMI, the significance values were 0.122 for the pretest and 0.791 for the posttest, compared with $\alpha = 0.05$. Because both significance values exceeded α , the learning-interest data for the experimental class were normally distributed. For the control class (Class IX A), which was taught without KOKAMI, the pretest and posttest significance values were 0.149 and 0.322, respectively. Both exceeded $\alpha = 0.05$, indicating that the learning-interest data for the control class were also normally distributed. Thus, the data for both classes were normally distributed.

Table 2
Normality Test of Learning Outcomes

Variable	Sig.	α	Interpretation
Pretest Learning Interest, Class IX A	0.55	0.05	Normal
Posttest Learning Interest, Class IX A	0.70	0.05	Normal
Pretest Learning Interest, Class IX B	0.56	0.05	Normal
Posttest Learning Interest, Class IX B	0.76	0.05	Normal

The Shapiro-Wilk test results for the experimental group, which was taught using KOKAMI, showed significance values of 0.056 for the pretest and 0.076 for the posttest, compared with $\alpha = 0.05$. Both values exceeded α , indicating that the learning-outcome data for the experimental class (Class IX B) were normally distributed. For the control class (Class IX A), which was taught without KOKAMI, the pretest and posttest significance values were 0.055 and 0.070, respectively. Both exceeded $\alpha = 0.05$, indicating that the learning-outcome data for the control class were also normally distributed. Thus, the learning-outcome data for both classes were normally distributed.

Table 3
Homogeneity Test of Students' Learning Interest

Variable	Sig.	α	Interpretation
Learning interest, Classes IX A and IX B	0,265	0,05	Homogeneous

The homogeneity test yielded a significance value of 0.265, while α was 0.05. Because the significance value exceeded α , the two groups could be considered to have homogeneous variances.

Table 4
Homogeneity Test of Students' Learning Outcomes

Variable	Sig.	α	Interpretation
Learning interest, Classes IX A and IX B	0,078	0,05	Homogeneous

The homogeneity test conducted using Statistical Product and Service Solutions (SPSS), version 21, yielded a significance value of 0.078, while α was 0.05. Because the significance value exceeded α , the two groups could be considered to have homogeneous variances.

The two-tailed significance value for the hypothesis test was 0.016. The null hypothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted when the significance value is below 0.05. In this study, $0.016 < 0.05$; accordingly, H_0 was rejected and H_1 was accepted. This result is also reflected in the calculated t-value of 2.499, which exceeds the critical t-value of 1.675. Thus, learning interest differed significantly between students taught using KOKAMI and those taught without it.

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This study investigated the use of KOKAMI instructional media to increase Grade IX students' interest in learning science at Public Junior High School 4 Sinjai. KOKAMI is a type of instructional medium that combines learning materials with a language game. Its use involves all students, including those who are usually passive or have limited interest in learning, and encourages them to participate more actively. The findings showed that students became more enthusiastic and interested in taking part in lessons because the media captured their attention. Students also participated enthusiastically, and the activities stimulated their curiosity, making it easier for them to understand the concepts and learning materials. In addition, by engaging all students in the learning process, KOKAMI helped reduce boredom.

KOKAMI is presented as a game and can help students acquire knowledge in an enjoyable way. It also gives them opportunities to imagine, think, present new ideas fluently, and develop motor skills. KOKAMI may therefore be useful in classroom settings for cultivating learning interest by encouraging students to remain active and focused during lessons. In this study, its use supported learning interest among Grade IX students in science at Public Junior High School 4 Sinjai (Yuli Rusiana, 2014). The independent-samples t-test yielded a two-tailed significance value of 0.016, which was below α ; therefore, H_0 was rejected and H_1 was accepted. This indicates a significant difference in learning interest between students taught using KOKAMI and those taught without it. The experimental class had a mean posttest learning-interest score of 80.73 and a mean pretest score of 75.92, whereas the control class had a mean posttest score of 80.38 and a mean pretest score of 77.77. These values indicate a difference in learning interest between the experimental and control classes.

The difference in learning interest between groups may be discussed in relation to student's engagement in KOKAMI activities. Drawing and responding to cards introduce variety and an element of surprise that may attract student's attention. This is consistent with Harackiewicz et al. (2016), who explain that activities that attract attention can trigger situational interest and support learning engagement. The result is also consistent with Khotijah and Syuhda (2021), who reported

differences in student activity between a class using KOKAMI and a control class. However, the present study measured interest using a questionnaire; attention and engagement were not measured separately.

The results showed that the mean posttest learning-outcome score in the experimental class using KOKAMI was 80.19, higher than the control-class mean of 71.35. The mean pretest scores in the experimental and control classes were 42.12 and 41.92, respectively. An independent-samples t-test indicated a significant difference in learning outcomes between the two classes ($t = 4.509$; $p < 0.001$). Therefore, the null hypothesis (H_0) was rejected and the alternative hypothesis (H_1) was accepted. In this study, the use of KOKAMI was associated with higher learning outcomes in the plant reproductive system topic.

The experimental class had a higher mean posttest learning-outcome score than the control class. This finding is directionally consistent with studies of KOKAMI in other contexts. Maslikan (2018) reported increases in student activity and learning mastery, while Nirmalasari et al. (2025) found differences in learning outcomes between classes using KOKAMI and classes not using it. The consistency in direction provides contextual support for the present finding, although differences in educational level, subject, and research design limit direct comparison.

The research findings show that the use of KOKAMI was associated with differences in learning interest and learning outcomes between the experimental and control classes. During KOKAMI activities, students interacted with question cards and learning materials through game-based tasks. These activities provided opportunities for students to participate, pay attention to the material, and respond to questions throughout the learning process. This engagement may help create a more stimulating learning environment and give students opportunities to revisit and process the material. The findings suggest that KOKAMI has the potential to support learning about plant reproductive systems. This interpretation should, however, be considered in the context of the study, which involved two classes at a single school.

Students responded positively to the use of KOKAMI instructional media. They became more active and enthusiastic during the learning process, which helped them understand the material more easily and contributed to improved learning outcomes. In addition, KOKAMI created an enjoyable classroom atmosphere and reduced student boredom by allowing them to learn through play. The use of KOKAMI had a positive effect on classroom learning because it made students' engagement with the material more enjoyable and helped them focus their attention on the lesson. Since KOKAMI involved all students directly in learning activities and generated strong enthusiasm for participation, it may also contribute to improved learning outcomes.

KOKAMI instructional media is made from plywood and constructed in the shape of a rectangular prism. It features several colors and contains multiple cards related to plant reproduction. The media also includes illustrated, color-coded question cards on plant reproductive

systems, with the colors corresponding to the images displayed on the KOKAMI box. KOKAMI offers an alternative means of presenting knowledge in an engaging and memorable way while stimulating students' interest and attention. It can also encourage students' enthusiasm for learning, promote collaboration during the learning process, and help develop their memory and concentration. In addition, KOKAMI can arouse new interests, increase motivation, stimulate learning activities, and even influence students' psychological responses to learning (Vani Lastiur Siahaan, 2023).

This study found that KOKAMI was effective as an instructional medium because it improved students' learning outcomes and understanding of plant reproductive systems. The findings indicate that KOKAMI had a significant effect compared with instruction without KOKAMI. The mean learning-outcome score of the experimental class, which used KOKAMI, was higher than that of the control class, which received conventional instruction. The different instructional treatments were associated with different final outcomes in the experimental class, which used KOKAMI, and the control class, which did not. The posttest score in the experimental class was substantially higher than that in the control class, indicating that the use of KOKAMI improved students' learning outcomes. Therefore, KOKAMI had a more positive effect on students' learning outcomes in the topic of plant reproductive systems than instruction without this media.

Conclusion

Grade IX students at Public Junior High School 4 Sinjai who were taught without KOKAMI (Mysterious Box of Cards) demonstrated a high level of learning interest. Their learning outcomes were in the moderate category. Student's taught using KOKAMI demonstrated a high level of learning interest. Their learning outcomes were in the high category, hypothesis testing indicated that KOKAMI had a significant effect on learning interest, with the independent-samples *t*-test yielding a calculated *t*-value of 2.599, which exceeded the critical value of 1.675; therefore, H_0 was rejected and H_1 was accepted; and KOKAMI also had a significant effect on learning outcomes, with a calculated *t*-value of 4.509 exceeding the critical value of 1.675; therefore, H_0 was rejected and H_1 was accepted.

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