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The Effect of The Use of Android Applications on Increasing the Motivation of SMA Students on Plantae Materials

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ABSTRACT

The use of android applications as Plantae teaching materials is currently a trend in science education research. This study aims to determine the effect of using android applications as teaching materials in increasing the motivation of high school students on Plantae material. The research design used is *posttest-pretest-control group design*. The subject of the study was SMAN 1 Panombeian Panei, precisely in Simalungun Regency, which consisted of one experimental class and one control class. Collecting data using a learning motivation questionnaire with a *Likert*. The data obtained were analyzed for the *gain* to determine the increase in learning motivation of high school students. The results showed that the use of android applications as Plantae teaching materials can have a significant effect on increasing high school students' learning motivation

INTRODUCTION

A nation's progress can be significantly influenced by raising the standard of education. The process of learning can raise the standard of education. This is due to the fact that learning is a process that cannot be separated from personal life in order to accomplish a goal. Memory improvement, information processing, and other intellectual elements are the main areas of concentration during the learning process. Revision of the curriculum, specifically the autonomous learning curriculum, is one of the government's efforts to raise the standard of education. The focus of this curriculum is on competency-based learning, which requires students to be able to plan, explore, understand, and evaluate their own outcomes (Wahyudi, 2023).

To enhance students' motivation to learn, teachers and students must work together to implement an independent learning system that is more effective and fun. The teacher must be careful in selecting the techniques and instructional materials utilized in accordance with the characteristics of the pupils in order to be able to establish such a learning environment. What instructional resources are utilized in learning will depend on the choice of learning strategies. Teachers can use the demonstration approach by utilizing instructional resources in the form of applications to promote learning, as in the Plantae material with the introduction of plant species.

The Plantae content in this research is highly complex, and the teacher's explanations that don't make sense to the students make them less interested in learning Plantae. For instance, a description of the many plant species, their classification, and the biological processes that take place inside of plants Teaching materials have unique advantages that can be considered research materials, according to (Handika, 2012). These advantages include: (1) the delivery of material can be uniformed; (2) the learning process becomes more interesting; (3) the student learning process, students are more interactive; (4) Less time can be spent on teaching and learning, (6) learning can take place at any time and anywhere, and (7) the role of the teacher can shift to one that is more constructive and fruitful. Today, more than just print media are used in the development of educational resources.

Android apps have useful application programs that can be used and created to further educational objectives. Android can specifically assist individuals in learning, teaching, and managing education. These are

some of the orientations of using android in the realm of education. In the same way, alternative learning resources can be used in place of traditional learning materials. Students receive resources via Android, also referred to as Android-based learning materials in this context.

According to the findings of interviews with several Biology teachers at SMA Negeri 1 Panombeian Panei, students still had trouble visualizing the material, so they tended to only pay attention to the teacher's lectures and the accompanying pictures. Additionally, due to a lack of information, students were forced to only use textbooks to study the material that the teacher had presented. As a result of the aforementioned issues, student learning outcomes did not meet the KKM. The purpose of this study is to ascertain how employing Android applications as teaching aids affects high school students' motivation to learn Plantae subject.

METHOD

It is a quasi-experimental study. In May and June 2022, the study was carried out at SMA N 1 Panombeian Panei. Students in class X IPA SMAN 1 Panomenian Panei during the academic year 2021–2022, made up the population of this study. One randomly chosen experimental class and one randomly chosen control class made up the research sample. An android application with instructional materials was distributed to the experimental group.

Students are given a learning motivation questionnaire with a Likert scale before learning begins to ascertain their initial motivation (Preetest). Students were then asked to complete a learning motivation questionnaire once more following the completion of the learning process to determine whether their levels of motivation had changed (posttest). According to the table, a pretest-posttest control-group research design was adopted (Wiersma, W., & Jurs, 2009).

Table 1. Research Design Group Class Pretest Pretest-Posstest Control

Class	Pretest	Treatment	Posttest
Experiment	O_1	X_1	O_2
Control	O_2	X_2	O_2

Description:

O1 : Pretest

O2 : Posttest

X1 : Using power point learning materials and Android-based media

X2 : Applying what you've learned in accordance with the instruction you've received from the teacher.

The following thermomalization equation predicts the rise in pupils' learning motivation (Hake, 1998).

$$g=\frac{S_f-S_i}{S_{max}-S_i}$$

Description:

Sf : the overall result (Posstest)

Si : initial rating (pretest)

Smax : Maximum Score

g : gain

To find out if the experimental class has more incentive to learn than the control class, as measured by an independent-sample t-test. The normality test and the homogeneity test of the data are the prerequisite tests that must be satisfied. The SPSS for Windows program was used to conduct the statistical analysis with a 95% confidence level. The following is the study's hypothesis.

H0 : There is no discernible difference between the experimental class and the control class in terms of boosting learning motivation.

Ha : Between the experimental and control courses, there is a substantial difference in the rise in learning motivation.

RESULTS AND DISCUSSION

The goal of this study is to determine how employing Android applications as teaching aids affects high school students' motivation to learn about Plantae. This study was done with class X IPA residents at SMA N 1 Panombeian Panei in the Simalungun Regency. One experimental class and one control class made up the sample for this study. Teaching aids are provided in the form of an Android application in the experimental class. The study's instructional materials were previously created and approved by high school biology teachers, media experts, and subject matter specialists.

Plantae, a text read in the second semester of class X SMA, serves as the research's instructional resource. Before the learning process begins, pupils are given a questionnaire about their initial motivation for learning, which uses a Likert scale. Based on the ARCS concept, the learning motivation questionnaire instrument was created (Attention, Relevance, Confidence, and Satisfaction). Additionally, after completing the learning process, students were requested to complete a questionnaire on learning motivation in order to assess their level of motivation for learning. The gain from students' prior and post-learning learning motivation is the data used in future study. Table 2 displays the average improvement in students' motivation to learn for both the experimental class and the control group.

Table 2. The results of the measurement of Student Learning Motivation

No.	Class	Number of students	Average		
			Pretest	Posttest	Gain
1	Experiment	30	4.9	79.4	60.89
2	Control	35	4.6	5.6	18.36

According to the N-gain score calculation results presented above, the experimental class's average N-gain score employing the Android application technique is 60.89, falling into the category of quite effective. The control class's average N-gain score, on the other hand, is 18.36, placing it in the category of poor student learning motivation. An independent-sample t-test is required to determine whether or not there is a significant difference between the experimental class and the control class. test with the necessary test for homogeneity and normalcy. Table 3 displays the results of the normalcy test.

Table 3. Data Normality Test

Tests of Normality

Ngainpercent		***Kolmogorov-Smirnov[a]***			
	Class	***Statistics***	***df***	***Sig.***	Conclusion
	experiment	.139	30	.146	Normal
	control	.162	35	.020	Normal

a. Lilliefors Significance Correction

The N-gain data in the experimental class and control class are clearly normal distributed, according to the study of the normality test results. This is evident from the higher significant values, which are greater than 0.05 and are 0.146 in the experimental class and 0.20 in the control class, respectively. Therefore, based on the results of the Kolmogrof-Smirnov decision-making According to the normality test mentioned above, the data is distributed regularly. As a result, the regression model's underlying presumptions or conditions for normality have been satisfied. Additionally, the independent-sample t-test and the homogeneity of the gain were used to measure the impact of Android application teaching materials on high school students' motivation to learn. Table 4 displays the outcomes of the homogeneity analysis and independent-sample t-test.

Table 4. Homogeneity test and independent-sample t-test

Group Statistics

	class	N	Mean	Std. Deviation	Std. Error Mean
pretest	experimental	30	48.57	6279	1,146
	control	35	46.31	.954	79.43
posttest	experimental	30	6,902	5,645	1,260
	control	35	56.23	6,390	1,080

The pretest and posttest were given to up to 30 students in the experimental class and 35 students in the control class, according to the chart above. The experimental class pretest mean value for student learning motivation was 48.57, the control class mean value was 46.31, and the posttest mean value for the experimental class was 79.43, the control class mean value was 56.23. Therefore, after doing pritest and posttest testing, it can be stated statistically descriptively that there is a difference in the average results of student learning motivation between the experimental class, When administering the pretest and posttest, also include the control group. Furthermore, the results of the "Independent - sample t-test below" must be interpreted in order to demonstrate whether there is a significant difference (significant) or not.

Table 4. Homogeneity Test and *Independent-Sample T-Test Test*

Data	**sig**	**conclusion**
Levene's Test	,136	Homogeneous
test for Equality of Means	,000	H0 rejected (there is a significant difference in the increase in learning motivation in both groups)

As noted in table 4, the data on learning motivation gain are homogeneous and come from Levene's test, which has a sign value of 0.136 (sig>0.005). Additionally, the t test findings show that the value of sig. is 0.000 (sig.0.005). This demonstrates that the experimental class improves more than the control class in terms of the rise in students' learning motivation. The findings of this study support Matso et al. & Sakat et al(2012) .'s findings that employing android applications as teaching materials can boost motivation for learning and make it more appealing, fascinating, and enjoyable. In this regard, a teaching tool that can boost students' learning motivation is required for the process of learning biology. Students' motivation is the driving force behind learning activities and ensures that they continue so that the learning subjects' desired goals are met. Students with strong motivation will have a lot of energy to carry out learning activities; as a result, motivation will impact the intensity of students' learning attempts when they are conscious of strong motivation, allowing them to produce positive learning outcomes (Handika, 2010). 2012)

Student-centered learning is greatly supported by the usage of instructional materials in the form of an Android application, and this will encourage students to strive to study things in greater depth. However, resources for teaching biology that can boost motivation at least include pertinent traits, attractive and clear visualization, adaptability, and a variety of evaluation questions. Relevant information is that which adheres to the applicable high school biology curriculum. This importance of relevancy in learning medium is crucial (Mulyanta, 2009). Flexibility means that it can enable students to learn anywhere and anytime. Clear and appealing visualizations are designed to boost student attraction so that students do not get bored in utilizing learning media to discover knowledge (Suki, 2007).

CONCLUSION

According to the findings of the research, there is a substantial difference in how high school pupils increase their passion for learning, with those using Android application teaching materials showing superior development. Several recommendations were made to improve the learning motivation of high school students, including (1) the need to create analogous teaching resources for other materials and subjects, and (2) the necessity for additional research on other factors relating to the use of android-based learning media.

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