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Implementation of Learning Using Interactive Multimedia Based on Android On Theme 9 be Class V SD

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ABSTRAK

Permasalahan yang ditemukan dalam pembelajaran tematik kelas V Sekolah Dasar disebabkan oleh metode pengajaran guru yang konvensional dan tidak menggunakan media pembelajaran yang menarik sehingga siswa merasa jenuh untuk mengikuti kegiatan pembelajaran. Penelitian ini merupakan tindak lanjut dari hasil uji validitas dan uji kepraktisan multimedia interaktif yang telah dikembangkan menggunakan Sistem Operasi Android. Penelitian ini bertujuan untuk menganalisis efektivitas multimedia interaktif berbasis android. Metode yang digunakan untuk mengumpulkan data adalah observasi, wawancara, dan tes. Instrumen yang digunakan untuk mengumpulkan data adalah soal tes. Data dianalisis menggunakan uji-t. Pada penelitian sebelumnya, validitas multimedia interaktif berbasis android diuji melalui uji validitas ahli, dan uji kepraktisan melalui uji coba individu. Keefektifan penggunaan multimedia interaktif berbasis Android diuji melalui pemberian pretest-posttest berupa tes objektif yang terdiri dari 20 soal dengan 12 siswa. Hasil uji keefektifan hasil belajar siswa dari data pretest dan posttest menunjukkan peningkatan dari rata-rata sebelum menggunakan media pembelajaran interaktif berbasis android.Berdasarkan data tersebut, dapat disimpulkan bahwa multimedia interaktif berbasis pembelajaran tematik android untuk meningkatkan hasil belajar siswa pada siswa adalah valid, praktis dan efektif untuk digunakan dalam proses pembelajaran. Dengan demikian, dapat disimpulkan bahwa multimedia interaktif berbasis android yang dikembangkan efektif dalam meningkatkan hasil belajar siswa kelas V Sekolah dasar.

ABSTRACT

The problem in the thematic learning of class V Elementary School is caused by conventional teaching methods and does not use engaging learning media so that students feel bored to take part in learning activities. This research is a follow-up to the results of the validity test and practicality test of interactive multimedia developed using the Android Operating System. This study aims to analyze the effectiveness of android-based interactive multimedia. The method used to collect data is observation, interviews, and tests. The instrument used to collect data is a test question. Data were analyzed using a t-test. In previous studies, the validity of android-based interactive multimedia was tested through expert validity tests and practicality tests through individual trials. The effectiveness of using Android-based interactive multimedia was tested by giving a pretest-posttest in the form of an objective test consisting of 20 questions with 12 students. The effectiveness test results of student learning outcomes from the pretest and post-test data showed an increase from the average before using android-based interactive learning media. Based on these data, it can be said that interactive multimedia based on android thematic learning to improve student learning outcomes in students is valid, practical and effective for use in the learning process. Thus, it can be said that the Android-based interactive multimedia developed effectively improves the learning outcomes of fifth-grade elementary school students.

1. INTRODUCTION

The 2013 curriculum for elementary school level uses integrated thematic learning that is integrative from grade I to grade VI. Integrated thematic learning is learning that integrates various competencies from various subjects into various themes (Diputra, 2016; Rahmi et al., 2019; Utami & Wardani, 2020). The existence of this thematic learning is expected to meet national educational goals in cognitive, affective and psychomotor aspects (Khoeriyah & Mawardi, 2018; Nur Utami & Mustadi, 2017;

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Sunarti et al., 2016). The learning approach used in this learning brings several subjects into a theme so as to provide a meaningful experience for students. This will make children understand the concepts that have been learned through direct experience(Bakhtiar, 2018; Setiawan, 2020; Suyono et al., 2017). One of the subjects contained in thematic learning is natural science (IPA). Natural science is a learning that studies nature systematically(Fitria, 2019). IPA learning provides hands-on experience to students to develop students' potential. IPA learning is expected to be a vehicle for students in learning themselves and the surrounding nature based on the scientific method (Fitria, 2017).

But the problem that occurs today is that there are still many students who have difficulty in learning IPA (Lestari et al., 2017; Santiasih et al., 2013; Widani et al., 2019). Based on interviews and observations was conducted at SDN 31 Sungai Limau, it was found that there are still many students who get grades below the minimum standard of 75. Many of the students who have not been completed on the theme of 8 Environment Friends of Us in subthema 1 on Humans and the Environment only 55% of students are completed, in subthema 2 on Environmental Change 62% of students are complete, in subthema 3 on Environmental Conservation Efforts there is an increase of 65% of completed students, so that the average percentage of completion on theme 8 is 60.67% and not yet KKM. In addition, when learning begins students are passive in learning and only listen to explanations from teachers. This indicates that students experience a difficulty in understanding the learning material. Another problem found is that teachers still ignore existing media such as tablet media It has the impact of lack of student motivation in the learning process. Lack of learning media that can facilitate students in learning will affect student learning outcomes (Pramana & Suarjana, 2019; Widiantini et al., 2017).

Based on these problems, the teacher must be able to do the learning process well, meaningful, fun, creative and even able to innovate. There are various ways to innovate in learning, among others by applying interesting learning models, methods and media so that learning is more interesting and does not feel boring for learners (Setianingsih et al., 2019; Suryani et al., 2019; Widiantini et al., 2017). In determining models, media, methods, strategies, even learning approaches we must know in advance the characteristics of the problems faced (Awe & Benge, 2017; Ayuni et al., 2017; Seika Ayuni et al., 2017). In general, teachers have implemented learning models but have not been optimal and have not been supported by learning media that accommodate learning models that are able to make learners think critically and solve problems. One solution to overcome this problem is the use of innovative media that can help teachers in providing learning materials to students. Good learning media is one of the important means of supporting education. Innovative learning materials can also help students in understanding learning materials (Arisantiani et al., 2017; Setianingsih et al., 2019; Suryani et al., 2019; Wulandari et al., 2020).

The use of media as a tool can improve the learning achievement of learners (Fadhil, 2015; Handayani et al., 2017). Media selection must also be adapted to the development of increasingly sophisticated science and technology. By using technological advancements of the digital era 4.0 that offer updates in the creation of learning media (Daryanti et al., 2019; Dwi Lestari & Putu Parmiti, 2020). Currently teachers are required to be able to use technology in the learning process. This will bring students to study (Dinayusadewi et al., 2020; Nur Millati Hanifah, 2019; Udayani et al., 2021). In addition, in the pandemic period the learning system shifted from face-to-face learning in schools to home learning or distance learning so that teachers are required to be able to use technology in supporting learning (Alamiyah et al., 2021; Rahayuningsih, 2020; Udayani et al., 2021). The development of the times encourages an applicative and innovative learning process to attract students' interest in learning to encourage more effective learning. One of the innovative media that can be used is android-based interactive multimedia . Android is one of the latest technologies that can improve the quality of learning if used wisely(García-Martínez et al., 2019; Nuryadi et al., 2020; Tseng et al., 2018). In general, students are very easy to use mobile phones. If mobile phones are presented as a medium of learning in elementary school, it will certainly make students more challenged and excited(Chang et al., 2021; Su & Cheng, 2013; Suprianto et al., 2019). Android-based interactive multimedia will make it easier for students to learn. Multimedia is a combination of media that uses computers and digital equipment. Multimedia as a tool to convey messages to students in the form of audio, visual and audio visual (Khamparia & Pandey, 2017; Khan & Masood, 2015; Riyadi & Pardjono, 2014). Interactive Multimedia in the form of learning media that will be designed using android as an independent learning delivery medium that can be used anywhere and anytime, reduce the use of paper (environmentally friendly) and be able to improve student learning outcomes(Syahrowardi & Permana, 2016; Yektyastuti & Ikhsan, 2016).

The findings of previous research also stated that multimedia learning can facilitate students in learning(Gunawam et al., 2015; Rosalina & Suhardi, 2020; Yuniarni et al., 2020). Other research also states that interactive multimedia can improve students in learning (Arywiantari et al., 2015; Maharani, 2015; Sanusi et al., 2015). It can be concluded that multimedia learning can help students in learning IPA. The difference between this research and previous research is that interactive multimedia will be applied to

integrated thematic learning, namely on theme 9, Subtheme 1 about objects around us. The advantage of this research is that interactive multimedia that will be used will provide opportunities for students to directly participate in understanding the material so that learning becomes fun and students can solve problems concretely. The purpose of this study is to analyze the effectiveness of android-based interactive multimedia. It is hoped that android-based interactive multimedia can help students in learning so as to improve student learning outcomes.

2. METHOD

This study is a follow-up to the results of validity tests and tests of android-based interactive multimedia practicalities to improve thematic learning outcomes in elementary school. This study examines the effectiveness of interactive multimedia that has been developed. The study was conducted at SD N 31 Sungai Limau. The sample consisted of 12 students of class V. The instrument used is a matter of objective tests that have been tested for validity and reliability. The data is adianalysis using the t-test. The methods used to collect data are observations, interviews, and tests. Analysis of media effectiveness is based on data obtained from data collection which includes the results of observations of student activities and student learning outcomes. The category of effectiveness presented in Table 1.

Table 1. Effectiveness Category

Level of Achievement (%)	The Category of Achievement
81 – 100	Very Effective
61– 80	Effective enough
41 – 60	Less Effective
21 – 40	Ineffective
0 – 20	Very Ineffective

(Akbar, 2017)

The effectiveness of media is determined by looking at the achievement of the completion of student learning outcomes by using learning media used during the learning process. Student learning outcome data is obtained through a sheet about students' abilities before and after using interactive multimedia based on android thematic learning class V Elementary School. The acquisition of effectiveness results using learning outcomes, description is generally used T Paired Test statistical technique. The T paired test is a comparative test conducted on a single paired sample(W. Anggraini et al., 2017). The t paired test was used because the Effectiveness test on this study used *One Group Pretest-Posttest Design.* Before hypothesis testing is first done test the requirements of analysis in the form of a normality test as a condition of hypothesis testing. Table of achievement of learning outcomes presented in Table 2.

Table 2. The Level of Achievement of Learning Outcomes

Level of Achievement (%)	The Category of Achievement
81 – 100	Very good
61– 80	Good
41 – 60	Enough
21 – 40	Less
0 – 20	Very Lacking

3. RESULT AND DISCUSSION

Result

Effectiveness of student learning outcomes, researchers conduct pretest and posttest. The value of *pretest* effectiveness is obtained before using android-based interactive learning media applications and posttest effectiveness values after using interactive multimedia. The average student pretest result was 60.41. The average post-test student result was 95.42. Based on data analysis techniques, research learning results to draw conclusions whether there is a significant influence from the utilization of android-based interactive learning media for thematic learning is statistically analyzed. Before hypothesis testing using pairing t-test, first the normality test is carried out. The normality test is done to find out whether the sample data comes from normal distributed data or not, so that analysis can be used using pairing t-test. In the normality test is used liliefors test as stated in the data analysis technique. Normality test results with a real level of α 0.05 for sample 12. Based on data analyzis recapitulation of normality test results it is seen

that the t-test pretest of 0.226 is smaller than L_{table} 0.242 for α 0.05. Therefore, pretest value comes from data that is normal distribution. For posttest obtained L_{count} 0.354 smaller than L_{table} 0.242 for α 0.05. With demkian post-test values derived from normal distributed data. After the normality test is done, it is done by pairing t-test to find out if there is a significant difference for the value of the two groups.

The T-test is performed on two paired samples; A paired sample is a sample with the same subject, but there are two different treatments, the subject will get the first treatment that is the learning outcome before using interactive multimedia based on android, after which the subject gets the second treatment that is the result of learning after using android-based interactive multimedia in thematic learning class V. The value of student learning outcomes before using android-based interactive multimedia is 60.417, while the value of student learning outcomes after using android-based interactive multimedia is 95.417. The effectiveness of student learning outcomes is presented in Figure 1.

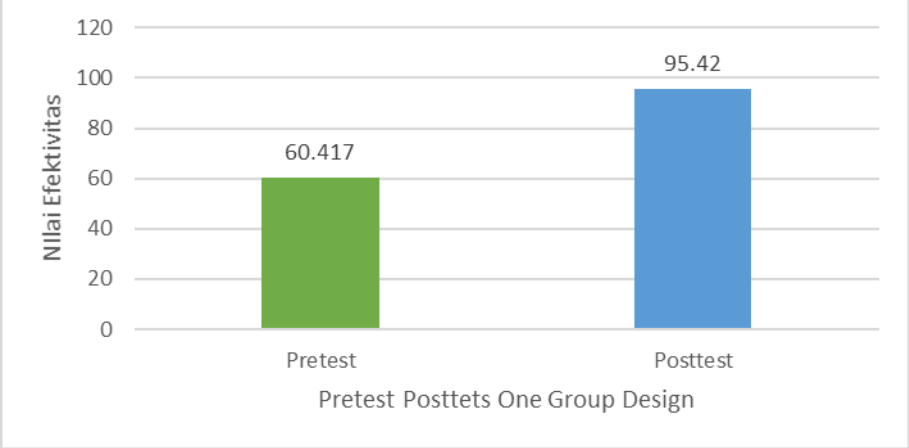

Figure 1. Test scores on effectiveness of student learning outcomes

It can be stated that there is a Mean difference of 35,000 (see SPSS output value). This figure comes from learning outcomes after using android-based interactive learning media minus learning outcomes before using android-based interactive learning media which is 83.70 – 64.44 = 19.26. This difference showed an increase of 19.26 from the average before using android-based interactive learning media. Based on the results of the SPSS T-test analysis, T-count output is 28,434. For statistics the table can be searched on table t, by the way: first, the level of significance (α) is 10% for the two-sided test so that each side becomes 5%. df (degree of freedom) or degree of freedom can be sought by the formula of the amount of data - 1 i.e. 12-1 = 11, then can be obtained t table is 1,796. So obtained t calculated data that is 1,796 < 17.66 then Ho was rejected. So it can be concluded that android-based interactive multimedia on thematic learning of Class V Elementary School is significant, namely the average IPA value of theme 9 subthema 1 before and after using android-based interactive multimedia there is a significant difference so that the value increases student learning outcomes. In addition to the calculation can be seen from the level of significance seen in the table is 0.00 ≤ 0.05 then it can be stated there is a significant difference in learning outcomes. So it can be concluded that the use of android-based interactive multimedia is effective to improve the learning outcomes of students of class V of State Elementary School 31 Sungai Limau on thematic learning. Based on data testing through the T test in pairs with the test level reached 95% it can be concluded that the use of android-based interactive multimedia on thematic learning class V is effectively used in the learning process.

Discussion

Based on the results of data analysis it can be concluded that interactive multimedia is effectively used in learning. This is caused by several factors. First, this interactive multimedia can be a solution for thematic learning by maximizing multimedia in schools both through computers and *smartphones* (Khamparia & Pandey, 2017; Rosalina & Suhardi, 2020). When using this medium students are highly motivated in learning. This is also reinforced by previous research stating that interactive multimedia can also improve students' learning spirit and motivation (Hadders-algra, 2020; Indah Septiani et al., 2020; Umarella et al., 2019). Multimedia uses different types of media such as the use of video, sound, images that are together to achieve learning goals. Multimedia is a combination of a wide range of text, audio, graphics, animation and video media interactively(Aditama, 2020; Maharani, 2015; Riyadi & Pardjono, 2014). The use of audio and visual media will make it easier for students to learn because it can be used by students

who have diverse learning styles (Fauzi et al., 2017; Puspitasari & Murda, 2018; Widiatmika et al., 2017). It also increases students' learning motivation in studying IPA.

Second, multimedia is effectively used in learning because it makes it easier for students to understand learning materials. Interactive multimedia is developed with a display that has the function to convey messages and information to students and has interactiveness for its users (Arywiantari et al., 2015; Syahrowardi & Permana, 2016). Elements of interactivity are indispensable for interactive multimedia to be controlled by the user. This causes students to have freedom in regulating the course of multimedia. This interactive multimedia will make it easier for students to understand learning materials easily (Diputra, 2016; Gunawam et al., 2015; Scott & Walczak, 2009; Yuniarni et al., 2020). The use of images on multimedia also makes it easier for students to understand the lesson. Previous research also stated that the use of media in accordance with the content of the lesson will facilitate students in absorbing information (Permatasari, 2017; Puspita et al., 2016; Suhandra, 2018). In addition, this media also pays attention to the use of text. In multimedia narrative learning can be used in conjunction with photos or text to further clarify the information to be conveyed(Incedayı, 2018; Indah Septiani et al., 2020; Lauc et al., 2020). This makes it easier for students to understand the subject matter presented on interactive multimedia.

Third, multimedia is effectively used in learning because it can improve student learning outcomes. Students who easily understand the subject matter will have an effect on the student's improved learning outcomes(Kurniawati & Nita, 2018; Sanusi et al., 2015; Sukmana & Suartama, 2019). Android-based interactive *multimedia* is proven to influence student learning outcomes on thematic learning IPA. As has been stated in the discussion of the research hypothesis, proving a significant positive influence between android-based interactive multimedia on thematic learning of IPA on the learning outcomes of students of Class V of State Elementary School 31 Sungai Limau. The results of the study as discussed show a relationship between theory and research results. The use of media that suits the characteristics of students and the eyes of students will facilitate students in learning so that it affects the student's improved learning outcomes. (M. S. A. Anggraini & Sartono, 2019; Armansyah et al., 2019; Wulandari et al., 2019).

The above research is also supported by previous research that states that the use of technology through interactive multimedia can be used to assist teachers in delivering learning materials(Prasetyo et al., 2020; Rubini et al., 2018; Sagala et al., 2017). Other research findings also state that interactive multimedia can improve students' learning spirit and motivation so as to improve students ' learning outcomes.(Irawan & Suryo, 2017; Putra et al., 2018; Umarella et al., 2019; Zarkasi & Taufik, 2019). It can be concluded that multimedia learning is worth using in learning. The advantage of this research is that interactive multimedia that will be used will provide opportunities for students to directly participate in understanding the material so that learning becomes fun and students can solve problems concretely. In addition, the advantages of this research are android-based interactive multimedia to be an attractive alternative learning medium that makes it easier to understand learning and has an impact on improving student learning outcomes. The limitation of this research is that this study only examines the implementation of android-based interactive multimedia only on IPA subjects. However android-based interactive multimedia is worth using in every subject but must be adapted to the characteristics of the material. It can be concluded that the use of android-based interactive multimedia is effectively applied in IPA learning.

4. CONCLUSION

Android-based interactive multimedia is effectively used in learning. This is because android-based interactive multimedia can increase students' learning spirit and motivation, and make it easier for students to understand IPA material, thus impacting students' improved learning outcomes. It is recommended to teachers to use android-based interactive multimedia so that students can more easily understand IPA learning and can improve student learning outcomes.

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