

The Effectiveness of Using A Qur'an-Integrated Pop-Up Learning Media Book for Studying the Temperature and Change Materials

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ABSTRACT

The 4.0 industrial revolution is a current phenomenon in various countries, including Indonesia. Indonesia responded quickly to the issue of the industrial revolution era 4.0 by using technological advances, especially, in the field of education. One important aspect in the field of education is the learning outcomes obtained by students. The achievement of student's learning outcomes is influenced by the use of pop-up learning media book. The purpose of this study is to determine the effectiveness of the use of pop-up learning media book. The pop-up book contains a picture story that will show a three-dimensional shape every time the page of the book is opened. This study uses a Quasy Experimental design with a non-equivalent group in Gading Rejo State Junior High School 3. Judging from the results of the effect size test, it indicates that the use of the pop-up learning media media is effective among the students.

Keywords: *Learning outcomes, pop-up book media, temperature and change materials*

1. INTRODUCTION

Education in Indonesia today is facing a global challenge called the 4th industrial revolution era or industry revolution 4.0. In the era of industry revolution 4.0, one of the most important elements of education, is that the need of develop the quality of education in Indonesia.[1] Thus, it is a need to achieve the educational goals that have been pursued which are called learning and learning.[2] Education has various branches of science and one of them is physics.[3] Physics directs students to learn independently in order to help students gain a broad understanding of the nature around them.[4] So in the Physics learning process, students are required to be actively involved, in order to improve good learning outcomes.[5]

The final observations show that SMP Negeri 3 Gading Rejo can be concluded that students who have not participated in the learning process properly. because the learning process at the school is only limited to teaching using books and just write on the blackboard without explaining with examples of concrete objects concerning the physical material.[6] As a result, students in the Physics learning process are only able to memorize the ability but do not focus on the concept of physics it self.[7] So, the impression of students towards physics subjects tends to be boring.[8] This has caused the learning outcomes of students at SMP Negeri (State Junior High School) 3 Gading Rejo to be low. Another factor for the low quality of student's learning outcomes is the

inaccurate use of learning models and media assistance in the learning process. Because the inaccurate use of learning models and media assistance in the learning process will result in student learning outcomes.[9]

Learning outcomes refer to the results of patterns of behavior, values, understanding, attitudes, appreciation and skills.[10] Because learning outcomes have a very close relationship with the memory of learners, therefore learning outcomes can be said to be the impact of the learning process so that students' skills and abilities can be seen from learning outcomes.[11] Efforts to improve student learning outcomes need to be the use of appropriate learning media.

Learning media are functioned as teaching aids that also influence the atmosphere, conditions, and learning environment that are arranged and created by the teacher.[12] There are several types of learning media that can be used to improve learning outcomes. One of them is the Pop Up Book. It is a type of book or card in which there are folded images that are cut and appear to form a three-dimensional layer when the page is opened.[9]The purpose of this paper is to know the effectiveness of learning media Pop-Up Book integrated verses of the Qur'an in the material temperature and changes.

2. RESEARCH METHOD

This study uses a quasy experimental research method with a non-equivalent control groove design. This design involves the control class and the experimental class.[13]

The non-equivalent control group research design is shown in Figure 1 below.



Figure 1 Research design Non-Equivalent Control Group

Information:

O_1 : Pretest in the experimental class

O_3 : Pretest on the control class

X: The treatment using the Quantum

Learning Model approach is supported by Mind Mapping media

O_2 : Post-test in the experimental class

O_4 : Post-test in the control class

The population in this study is all students of grade seventh, SMP 3 Gading Rejo. Sampling was done by using two classes of purposive sampling technique. The experimental class uses Pop-Up Book learning media and the control class uses conventional learning media. The instrument used in this study was a test instrument in the form of essay questions to measure learning outcomes in students' cognitive domains and observation sheets to measure affective and psychomotor domains. Before being given the experimental class treatment and the control class was given a pretest in advance with the aim of knowing the students' initial abilities.

Then the results of the post-test after the learning process are tested using moments, so that they can be used to measure learning outcomes in the cognitive domain. The data analysis technique was performed using the normality test using the Kolmogorov-Smirnov test. The homogeneity test was for the homogeneity of variances test. The hypothesis was measured by a t-test. To test the effectiveness, the effect size was used. And for the affective and psychomotor assessment instruments, the observation sheets were used.

3. RESULT AND DISCUSSION

This research was conducted at SMP 3 Gading Rejo, for approximately 1 month. This study aims to see the effect of Pop-Up Book learning media on results learners learn on the material temperature and its changes.

Student learning outcomes can be seen from the results of the pretest and post-test scores. Pretest is given at the beginning of the meeting before being given a treatment (treatment) with the material temperature and changes. Pretest result data for the control class with the lowest value of 10 and the highest value of 60.

While the results of the pretest for the experimental class with the lowest value of 10 and the largest value of 50. If seen from the results of the students' pretest for both classes, namely the control class and the experimental class, it shows that the learning outcomes of students are still very low.

After being given a pretest, each class is given treatment (treatment), namely the experimental class using the Pop-Up Book learning media and the control class using conventional media. Where the experimental class becomes more active than the control class that only uses conventional conventional learning models.

After the treatment was finished, then both the experimental and control classes were given a test that is the assessment for the cognitive domain. From the results of the post-test for the control class got the lowest score of 71 and the highest value of 86 while in the experimental class obtained the lowest value of 72 and the highest value of 100. From the post-test results of students can be seen that the learning outcomes of students experienced a significant increase compared to the value of the results of the pretest.

The results of observations for the affective and psychomotor domains in both classes, namely the control and the experimental class, provided a fairly high percentage. In the control class, the results of observations in the affective domain was 72% and in the psychomotor domain was 74%. In the experimental class obtained observations in the affective domain was at 76.8% and in the psychomotor domain was at 80%. This observational data was included in the excellent category. Based on the N-Gain test conducted by researchers, the pretest and post-test results of the learning outcomes for the experimental and control classes show results with the control class N-Gain that is equal to (0.66) with moderate classification and experimental class (0.77) with high classification.

The obtained data in the form of student learning outcomes, both for the experimental class and the control class, have been tested for normality and homogeneity tests as a prerequisite test. Based on the results of the normality test of student learning outcomes, both control and experimental classes, the pretest and post-test obtain data that is for the control class normality test results on the pretest value.

Getting a $L_{count\ it}$ value of 0.139887236 and the post-test value obtained a $L_{count\ it}$ value of 0.12047293 and obtaining a L_{table} value of 0.1784 both for the pretest value and the posttest value. While for the experimental class the normality test results on the pretest value get a $L_{count\ it}$ value of 0.168000403 and the posttest value obtain a $L_{count\ it}$ value of 0.17172976 and obtain a L_{table} value of 0.1784 both for the pretest value and the posttest value. According to the above data it can be seen that the $L_{count\ it}$ value $< L_{table}$ for both classes at the pretest and posttest so that the H_0 is accepted and the data is normally distributed.

Table 1 Normality Test

Class	Pretest		Posttest		Interpretation
	$L_{count\ tit}$	L_{table}	$L_{count\ tit}$	L_{table}	
Experiment	0,16	0,17	0,17	0,17	Normal
Control	0,13	0,17	0,12	0,17	Normal

Based on the results of calculations carried out, this study shows that the value of F_{count} homogeneity test results of the control class pretest and the experimental class is 0.08. And the results of the post-test homogeneity test of the control class and the experimental class obtained a F_{count} of 0.32. By obtaining a F_{table} value of 3.14 for both the control class and the experimental class. In this case, the homogeneity test is tested using a homogeneity of variances test with a significant level of 0.05% with the criteria $F_{count} < F_{table}$, then the data is homogeneously distributed. So it can be concluded that the homogeneity test results of the control class and the experimental class pretest and post-test come from the same population, because the results of the pretest and post-test of the two classes get the results of $F_{count} < F_{table}$, it can be said to be homogeneously distributed.

Table 2 The Result Homogeneity Test

Class	Pre-test		Post-test		Interpretation
	F_{count} it	F_{table} e	F_{count} it	F_{table} e	
Experiment	0,08	1,98	0,23	3,40	Homogen

After the prerequisite test is carried out, the results are normal and homogeneous, then the researcher tests the hypothesis by t-test. The results of the post-test hypothesis test for both classes, control and experiment, obtained a t-test of 2.39 and a t_{table} of 2.01. This shows that the value of $t > t_{table}$ then H_0 is said to be rejected and H_1 is said to be accepted.

Table 3 The Result Hypothesis Test

Class	Result Test-t		Result	Test Decision
	T_c ount it	t_{table} ble		
Eksperimen	2,39	2,01	$t_{hitung} > t_{table}$	H_1 Accepted
Control				

Furthermore, an effect size test is performed to determine the effectiveness of instructional media. Effect size test results obtained by 0.36 in the medium category. This shows that there is effectiveness of the media Pop-Up Book learning towards student learning outcomes.

Table 4 The Result *Effect Size*

Class	<i>N-Gain</i> <i>Average</i> <i>e</i>	<i>Deviation</i> <i>standard</i>	<i>Effect</i> <i>Size</i>	<i>Explanati</i> <i>on</i>
Experiment	0,77	0,14	0,37	Medium

Can be concluded that there is effectiveness in the use of Pop-Up Book learning media on student learning outcomes. This is consistent with research conducted by Elyn Diah that it can be concluded that PBL learning using Pop-Up Books has proven to be effective.[14] In addition, the effect size test of Pop-Up Book learning media has proven to be effective against student learning outcomes. Judging from the results of the effect size test.

Student learning outcomes on the affective and psychomotor aspects in terms of the observation sheet assessment. Observations were also made by the science subjects themselves because teachers at the school already knew the character of each student. In the affective domain participants are assessed all attitudes based on categories in affective assessment starting from the beginning of learning to the end of learning. Likewise with the psychomotor assessment of students assessed by categories in the psychomotor assessment.

Based on the results of the percentage of observation sheets that the percentage of affective and psychomotor aspects for the experimental class obtained higher percentage results than the affective and psychomotor aspects for the control class. From the presentation of learning outcomes in the cognitive, affective and psychomotor areas above, the experimental class is always bigger than the control class. So it can be said that the use of Pop-Up Book learning media carried out in the experimental class has a great influence on student learning outcomes compared to the control class.[15]

4. CONCLUSION

Based on the results of the research that has been done, it can be concluded that the effectiveness of the Pop-Up Book learning media in the experimental class as seen by the results of the effect size test obtained a figure of 0.37 in the medium category. While increasing student learning outcomes in the realm of cognitive, affective and psychomotor, both in the Pop-Up Book learning media and the conventional learning models. In the cognitive domain, the N-Gain score was 0.77 (high category), while in the control class the N-Gain value was 0.66 (medium category).

In the affective domain, the experimental class was 76.08% while the affective domain in the control class was 72%. And in the psychomotor domain in the experimental class was 80% and in the psychomotor domain in the control class was 74%.

5. SUGGESTION

From the results of this study further research can be carried out on the Pop-Up Book learning media by using other variables for the learning.

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