**APPLICATION OF COMIC MEDIA TO IMPROVE LEARNING OUTCOMES AND EDUCATIONAL AFFECTIVE STUDENTS ON STRAIGHT MOTION MATERIAL IN CLASS VIII SMP NEGERI 1 DARUL IMARAH ACEH BESAR**

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**Abstract:** Based on the results of observations in the field, most students at SMPN 1 Darul Imarah Aceh Besar school tend to like subjects without mathematics, one of which is art, at the time of observation there were even students who came out of class to make art and chose not science subjects because according to students that science is very complicated. With the presence of comic media it is hoped that it will arouse students' enthusiasm for learning, because comic media is an alternative media for playing while learning. The purpose of this study was to determine whether the application of comic media can improve cognitive and affective learning outcomes of students in straight-motion material in class VIII of SMPN 1 Darul Imarah Aceh Besar. The research method used in this study is to use a quasi-experimental method (Quasi Experiment), with Pre-test and Post-test Control Group Design. Samples were taken from class VIII-4 as an experimental class and class VIII-3 as a control class. Data collection is done by tests and questionnaires. Based on the results of hypothesis testing that has been done, using the t test with a significant level α = 0.05 and dk = 38. The calculation results obtained tcount> ttable is 3.31> 1.68, Based on t test then tcount> tTable, then Ha accepted and H0 rejected, which states that the influence of the use of comic media to improve cognitive and affective learning outcomes of students in the subject of straight motion in class VIII SMP Negeri 1 Darul Imarah Aceh Besar and the response of students Very Agree (SS = 58%), Agree (S = 37.5%), Less Agree (KS = 3%), Disagree (TS = 1%), and Strongly Disagree (STS = 0.5%).

**Keywords: Comic Media, Learning Outcomes**

**Preliminary**

The world of education in Indonesia is currently very weak, one of which is in science education, where the main factor that inhibits the success of students in learning science is the lack of an interesting touch from educators in explaining science so that it creates a sense of disinterest in learning science. The second factor is the lack of seriousness of students in learning so students are difficult to understand what is explained by educators. The third factor is the lack of experimentation in teaching can also hinder the achievement of student learning outcomes, because experiments in science education are very important, so that experiments cannot be separated from the world of science. Physics is a branch of natural science (science). But in fact that science is one of the subjects that require mathematical ability to solve problems and analyze theories. In general, students with low mathematical abilities will have difficulty understanding concepts and theories in physics. Physics is basically the same as the characteristics of science in general, but in learning physics is inseparable from the mastery of the basic concepts of physics In a learning process, a good learning achievement is needed, one of which is by using learning media that can attract the attention of students. Learning media is something that can be used to convey messages or information in the teaching and learning process so that it can stimulate students' attention in learning.

Based on some of the opinions above, we need a learning media to improve student learning outcomes, one of the learning media that can be applied is comic media, where comic media is a teaching material whose contents are learning in the form of summaries so as to attract students to read . So the existence of comic media based learning media is expected to improve students' cognitive and affective learning outcomes on straight motion material.

Based on observations and interviews in the field, the researchers saw that most students at SMPN 1 Darul Imarah Aceh Besar school tended to like subjects without mathematical analysis, one of which was artistry, at the time of observation there were even students who came out of class to make artwork and chose not to enter science subjects because according to the students that science is very complicated. Student learning outcomes have also not yet reached the KKM (Minimum Completeness Criteria), especially for straight-motion material and learning processes that are centered only on books making students bored and fed up because books are only filled with texts and formulas.

Learning is an activity carried out by a person intentionally in a conscious state to obtain a concept, understanding, or new knowledge to enable a person to change behavior that is relatively fixed both in thinking, feeling, and in acting.

Learning is the process of interaction between students and educators in a learning environment that aims to provide information from educators to students to obtain changes in behavior and potential of students.

Learning outcomes are the results obtained by students after following the teaching and learning process. Appearances that can be observed as learning outcomes are called abilities. These abilities are owned by students after receiving learning experiences in the learning process.

The word media comes from the Latin medius which literally means ‘middle’, ’intermediary’, or ‘introduction’. In Arabic the media is an intermediary or introduction to the message from the sender to the recipient of the message.

Comic is a cartoon that expresses a character and plays a story in a tight order and is a form of picture news, consisting of various situations and sometimes humorous. Comics are one of the media photos or images that are suitable and appropriate to be applied in learning.

Comics are defined as cartoonish forms that express characters and apply a story in a sequence that is closely related to the image and is designed to provide entertainment to the reader.

This study aims to determine how the effect of the application of comic media can improve cognitive and affective learning outcomes of students in the subject of straight motion in class VIII of SMPN 1 Darul Imarah Aceh Besar.

**Research methods**

**Research design**

The research design used was a quasi-experimental research method (Quasi Experiment), with Pre-test and Post-test Control Group Design. This research involves two classes, namely the experimental class and the control class, in both classes will be given different treatments. The experimental class will be treated by teaching using comic media, while in the control class the educator does not apply comic media. The research design is as follows.

**Table 3.1 Pre test Post test Control Group Design**

|  |  |  |  |
| --- | --- | --- | --- |
| Group | Initial Test | Treatment | Final Test |
| Experiment (E) | 01 | X | 02 |
| Group (K) | 01 | - | 02 |

Where O1 is giving a pre-test, O2 is giving a final test (post-test) and X is Learning with comic media.

**Data collection technique**

The data collection techniques used in this study are tests and questionnaires. For data collection tests in the form of written tests namely multiple choice questions (Multiple Choice), while the questionnaire is used to see the response of students to the media applied in learning.

**Data analysis technique**

1. **Normality Test**

Test the normality of the data first made into the distribution list then calculated the average variance and standard deviation. To test the normality of the sample, the formula used is.

$$x^{2}=\sum\_{i=l}^{k}\frac{(O\_{i}-E\_{i})^{2}}{E\_{i}}$$

Where x2 is the Chi-Square statistic, the frequency of observation Ei is the expected frequency and K is a lot of data.

1. **Variance Homogeneity Test**

The function of variance homogeneity is to find out whether this sample succeeds with the same variance, so the results of this study apply to the population, the formula used in this test are:

$$F=\frac{Varians terbesar}{Varians terkecil}$$

$$F=\frac{S\_{1}^{2}}{S\_{2}^{2}}$$

Where S12 is the variance of the interval class value and S22  is the variance of group class.

1. **Testing the Hypothesis**

To test the hypotheses that have been formulated about the differences in learning outcomes of students taught with comic media and students taught without using comic media, the following formula can be used:

 $$t=\frac{\overbar{x}\_{1}-\overbar{x}\_{2}}{\sqrt[s]{\frac{1}{n\_{1}}+\frac{1}{n\_{2}}}}$$

With is the number of students in the experimental class, is the number of students in the control class, is the average value in the experimental class, is the average value in the control class, Sadly the deviation is not a calculated value.

Testing the research hypothesis needs to be formulated as follows:

H0 :$μ$1 = $μ$2 that the level of understanding of students is taught through media.

Comics are lower or equal to the level of student learning outcomes

taught without comic media.

Ha :$μ$1>$μ$2 that the level of understanding of students who are taught through

the Media is higher than the level of understanding of students who

are taught without using comic media.

Based on the hypothesis above, the right-side test is used. Tests carried out at a significant level α = 0.05 (5%) with a degree of freedom dk = ( n1+n2-2) where the testing criteria reject H0 if tcount> ttable, and accept H0 in other cases.

1. Student Questionnaire Analysis Analysis

The questionnaire used in this study took the form of a Likert scale where students gave a response to the response statements by selecting:

SS : Very agree

S : Agree

KS : Not agree

TS : Disagree

STS : Strongly Disagree

Student responses are used to measure students' opinions on interests, feelings of pleasure, and ease of understanding the lesson and also the way the teacher teaches and the learning approach used. To analyze student questionnaire data is done by calculating the percentage of relative frequency with the formula:

P = $\frac{f}{N}x 100\%$

Where P is the percentage number, f is the frequency of the number of students' responses in each aspect that appears, N is the total number of students and 100% is a constant value.

The percentage criteria for student responses are as follows:

0-10% = not interested

11-40% = a little interested

41-60% = quite interested

61-90% = interested

91-100% = very interested.

**Research Results and Discussion**

**a. Normality test**

**1) Pre-test Experiment Class**

Based on the results of the study, the highest and lowest order values ​​can be seen in the table below.

**Table 4.1 Sequence of the Highest and Lowest Grade Experiments**

|  |  |
| --- | --- |
| **Eksperiments** | ***Pre-test*** |
| The highest score | 60 |
| Lowest Value | 15 |
| SD | 13,18 |
| N | 20 |

*(Source: Student Pre-test Data Processing Results, 2019)*

Based on Table 4.1 it can be seen that the highest pre-test value of the experimental class is 60 and the lowest value is 15 while the highest post-test value is 90 and the lowest is 60 with a total of 20 students. After obtaining the above value, the next step is to determine the frequency distribution of the experimental class's pre-test value. The details can be seen in Table 4.2

**Table 4.2 Frequency Distribution of Student's Pre-Test Student's Pre-Test**

**Value**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test scores** | **Frequency (fi)** | **The midpoint (xi)** | **xi2** | **fi xi** | **fi xi2** |
| 15-23 | 5 | 19 | 361 | 95 | 1805 |
| 24-32 | 6 | 28 | 784 | 168 | 4704 |
| 33-41 | 5 | 37 | 1369 | 185 | 6845 |
| 42-50 | 1 | 46 | 2116 | 46 | 2116 |
| 51-59 | 2 | 55 | 3025 | 110 | 6050 |
| 60-68 | 1 | 64 | 4096 | 64 | 4096 |
| **amount** |  |  |  | **668** | **25616** |

*(Source: Student Data Processing Results, 2019)*

Based on Table 4.2 it is clear that the result of X2count is 4.34 the test is carried out at a significant level of 95% or (∝ = 0.05) and degrees of freedom dk = n - 1 = 20-1 = 19 then from the chi-square table obtained X2 (0.95) (19) = 30.1. To test the normality of the data obtained X2 count <X2 table 4.34 <30.1, it can be concluded that the data are normally distributed. The details can be seen in Table 4.3

**Table 4.3 Calculation Results for Pre-test Normality Test for Experimental Classes**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$∝$$ | **Many Students** | **X** count | **Ttable** | **Conclusion** |
| 0,05 | 20 | 4,34 | 30,1 | Normal |

*(Source: Data Processing Results at SMP Negeri 1 Darul Imarah Aceh Besar, 2019)*

**2) Post-test Experiment Class**

Based on the results of the study, the highest and lowest order values ​​can be seen in the table below.

**Table 4.4 Sequence of Highest and Lowest Post-test Experiment Classes**

|  |  |
| --- | --- |
| **Exsperiment** | ***Post-test*** |
| The highest score | 90 |
| Lowest Value | 45 |
| SD | 13,25 |
| N | 20 |

(*Source: Students' Post-test and Post-test Data Processing Results, 2019)*

Based on Table 4.4 it can be seen that the highest post-test value of the experimental class is 90 and the lowest value of 44. After obtaining the above value, the next step is to determine the frequency distribution of the experimental class's post-test value. The details can be seen in Table 4.5

**Table 4.5 Frequency Distribution of Post-test Student Value in Experimental Classes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test scores** | **Frequency (fi)** | **The midpoint (xi)** | **xi2** | **fi xi** | **fi xi2** |
| 45-53 | 1 | 58 | 2401 | 49 | 2401 |
| 54-62 | 2 | 65 | 3364 | 116 | 6728 |
| 63-71 | 3 | 72 | 4489 | 201 | 13467 |
| 72-80 | 4 | 79 | 5776 | 304 | 23104 |
| 81-89 | 6 | 86 | 7225 | 510 | 43350 |
| 90-98 | 4 | 94 | 8836 | 376 | 35344 |
| **amount** | **20** |  |  | **668** | **124394** |

*(Source: Student Data Processing Results, 2019)*

Based on Table 4.5 it is clearly seen that the calculation result of X2count is 3.96 testing done at a significant level of 95% or ($∝$ = 0.05) and degrees of freedom dk = n - 1 = 20-1 = 19 then from the chi-square table obtained X2 (0.95) (19) = 30.1. To test the normality of the data obtained X2count <X2 table 3.96 <30.1, it can be concluded that the data are normally distributed. The details can be seen in Table 4.6

**Table 4.6 Calculation Results for the Prost-test Normality Test for Experimental Classes**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$∝$$ | **Many Students** | **X** count | **Ttable** | **conclusion** |
| 0,05 | 20 | 3,96 | 30,1 | Normal |

*(Source: Data Processing Results at SMP Negeri 1 Darul Imarah Aceh Besar, 2019)*

**3) Pre-test Control Class**

**Table 4.7 Sequence of the Highest and Lowest Pre-Test Control Classes**

|  |  |
| --- | --- |
| **Eksperimen** | ***Pre-test*** |
| The highest score | 60 |
| Lowest Value | 15 |
| SD | 12,93 |
| N | 20 |

*(Source: Student Pre-test Data Processing Results, 2019)*

Based on Table 4.7 it can be seen that the highest pre-test value of the control class is 60 and the lowest value is 15 with the number of students 20 people. After the above values ​​are obtained, the next step is to determine the frequency distribution of the control class pre-test values. The details can be seen in Table 4.8

**Table 4.8 Frequency Distribution of Pre-Test Value of Students in Control Class**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test scores** | **Frequency (fi)** | **The midpoint (xi)** | **xi2** | **fi xi** | **fi xi2** |
| 15-23 | 8 | 19 | 361 | 361 | 2888 |
| 24-32 | 6 | 28 | 784 | 28 | 4704 |
| 33-41 | 3 | 37 | 1369 | 37 | 4107 |
| 42-50 | 1 | 46 | 2116 | 46 | 2116 |
| 51-59 | 1 | 55 | 3025 | 55 | 3025 |
| 60-68 | 1 | 64 | 4096 | 64 | 4096 |
| **Amount** |  |  |  | **668** | **20936** |

*(Source: Student Data Processing Results, 2019)*

Based on Table 4.8 it can be clearly seen that the calculation result of X2count is 16.43, the test is carried out at a significant level of 95% or ($∝$ = 0.05) and degrees of freedom dk = n - 1 = 20-1 = 19 then from the chi-square table we get X2 (0.95) (19) = 30.1. To test the normality of the data obtained X2count <X2 table 16.43 <30.1, it can be concluded that the data are normally distributed. The details can be seen in Table 4.9

**Table 4.9 Results of Pre-test Normality Control Class Calculation Results**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$∝$$ | **Many Students** | **X** count | **Ttable** | **conclusion** |
| 0,05 | 20 | 16,43 | 30,1 | Normal |

*(Source: Data Processing Results at SMP Negeri 1 Darul Imarah Aceh Besar, 2019)*

1. **Post-test Control**

Class Based on the results of the study, the highest and lowest order values ​​can be seen in the table below.

**Table 4.10 Sequence of the Highest and Lowest Post-test Control Class Post-test**

|  |  |
| --- | --- |
| **Eksperimen** | ***Post-test*** |
| The highest score | 85 |
| Lowest Value | 40 |
| SD | 11,15 |
| N | 20 |

 *(Source: Students' Post-test Data Processing Results, 2019)*

Based on Table 4.10 it can be seen that the highest post-test value of the control class is 85 and the lowest value is 40. After the above values ​​are obtained, the next step is to determine the frequency distribution of the post-test scores of the control class. The details can be seen in Table 4.11.

**Table 4.11 Frequency Distribution of Post-test Value of Students in the Control Class**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Test scores** | **Frequency (fi)** | **The midpoint (xi)** | **xi2** | **fi xi** | **fi xi2** |
| 45-53 | 3 | 58 | 2401 | 147 | 7203 |
| 54-62 | 6 | 65 | 3364 | 348 | 20184 |
| 63-71 | 5 | 72 | 4489 | 335 | 22445 |
| 72-80 | 4 | 79 | 5776 | 304 | 23104 |
| 81-89 | 2 | 86 | 7225 | 170 | 14450 |
| **Amount** | **20** |  |  | **1304** | **87386** |

*(Source: Student Data Processing Results, 2019)*

Based on Table 4.11 it is clear that the calculation result of X2count is 3.55 testing done at a significant level of 95% or ($∝$ = 0.05) and degrees of freedom dk = n - 1 = 20-1 = 19 then from the chi-square table obtained X2 (0.95) (19) = 30.1. To test the normality of the data obtained X2count <X2 table 3.55 <30.1, it can be concluded that the data are normally distributed. The details can be seen in Table 4.12

**Table 4.12 Calculation Results for the Control Class Post-test Normality Test**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| $$∝$$ | **Many Students** | **X**count | **Ttable** | **conclusion** |
| 0,05 | 20 | 3,55 | 30,1 | Normal |

*(Source: Data Processing Results at SMP Negeri 1 Darul Imarah Aceh Besar, 2019)*

**b.** **Homogeneity Test**

**1) Homogeneity Test Pre-test**

**Table 4.13 Calculation Results for Pre-test Homogeneity Test for Experiment Classes and Control Classes**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| $$∝$$ | **Many Students****(n)** | **Varian (S2)** | ***FHitung*** | ***FTabel*** | **Conclusion** |
| **Eksperimen** |
| 0,05 | 20 | 173,93 | 1,04 | 2,15 | Kedua data homogen |
| $$∝$$ | **Banyak Peserta Didik (n)** | **Kontrol** |
| 0,05 | 20 | 167,11 |

*(Source: Data Processing Results, 2019)*

Based on the above table, it is clear that Fcount ≤ F table or 1.04 ≤ 2.15, it can be concluded that the two variances are homogeneous for the Pre-test value data.

**c**. **Hypothesis Statistics**

used to test hypotheses are t-tests, with the formulation of hypotheses used are as follows: H0: μ1 = μ2 Ha: μ1> μ2 Where: H0: That there is no influence of the application of comic media to improve cognitive and affective learning outcomes of students on the subject of straight motion in class VIII SMPN 1 Darul Imarah Aceh Besar. Ha: That the influence of the application of comic media to improve results cognitive and affective learning of students in the subject of straight motion in class VIII SMPN 1 Darul Imarah Aceh Besar. Results Hypothesis testing in this study uses students' post-test data. Tests carried out at a significant level $∝$ = 0.05 with degrees of freedom dk = (n1 + n2-2), dk = 20 = 20-2 = 38 with the results obtained tCount = 3.31> ttable = 1.68. Based on the t test, tcount> ttable, then Ha is accepted and H0 is rejected, which states that there is an influence of the use of comic media to improve cognitive and affective learning outcomes of students on straight motion material in class VIII of SMP Negeri 1 Darul Imarah Aceh Besar.

**d. Analysis of Student Response Data**

Students' responses are used to find out how students' responses to learning using comic media, therefore educators distribute questionnaires to students in class VIII-4. Students' responses in class VIII-4 are filled by 20 students. From these data calculations are carried out, so we get the results of the students' responses which can be seen in detail in the Table below.

**Table 4. 15 Results of Class VIII-4 Students' Responses**

|  |  |  |
| --- | --- | --- |
|  | Respon | Persentase |
| SS | S | KS | TS | STS | SS | S | KS | TS | STS |
| Jumlah | 116 | 65 | 6 | 2 | 1 | 580% | 375% | 30% | 10% | 5% |
| Rata-rata | 5,8 | 3,25 | 0,3 | 0,1 | 0,05 | 58% | 37,5% | 3% | 1% | 0,5% |

*(Source: Data on Student Response Results, 2019)*

Based on the table above the results obtained by students' responses with the average percentage as follows: Criteria Strongly Agree (SS = 58%), Agree (S = 37.5%), Less Agree (KS = 3%), Disagree (TS = 1%), and Strongly Disagree (STS = 0.5%), it can be concluded that the use of comic media on the material of straight motion in SMP Negeri 1 Darul Imarah Aceh Besar received a positive response. Based on the results of data processing obtained by researchers, the analysis of data obtained through pre-test, with an average value of 33.4 experimental classes while the average value of the control class 29.8. This shows that the two homogeneous classes are the same before treatment, so that further research can be done, namely in the experimental class the comic media is applied, whereas in the control class only with conventional learning. After the treatment, the average post-test value of the experimental class rose to 77.8, while the average post-test value of the control class rose to 65.2. This can be seen in the graph below:

*Figure 4.1 Graph Average Student Learning Outcomes Experimental Classes and Control Classes, 2019*

Based on the graph above shows that there is an increase in student learning outcomes using comic media, in the experimental class that is from 33.4 to 77.8 with an average value of 44.4, while in the control class that is the class that does not use comic media, namely from 29.8 to 65.2 with an average value of 44.4. From the results of the study it can be seen that the use of comic media can improve student learning outcomes on straight motion material.

1. **Analysis of Student Responses**

After learning to use comic media, to see students 'responses, educators circulate a questionnaire, where this questionnaire aims to see students' responses to the use of comic media. The results of students' responses can be seen in Figure 4.2 in the form of a graph below:

*Figure 4.2 Student Response Graph, 2019*

Based on the graph above, it appears that the use of comic media on straight motion material received a positive response from students with an average percentage of criteria Strongly Agree (SS = 58%), Agree (S = 37.50%), Less Agree (S = 30 %), Disagree (TS = 3%), and Strongly Disagree (STS = 0.50%) Based on the results of research and data processing through questionnaires, the percentage shows that the response of students is positive.

Based on the results of research conducted by researchers shows that the data obtained has increased in the experimental class, the increase occurred because comic media can attract the enthusiasm of students and increase interest in reading so that the experimental class has increased learning outcomes.

The results of previous studies indicate that the comic media has an influence on the learning outcomes of Grade VIII students of SMP Negeri 1 Gedangan. This is indicated by the high test scores of the experimental class using learning comic media compared to the control group test scores that do not use learning comic media. The learning comic media is considered to be a new motivation in improving student learning outcomes. This is consistent with the theory put forward by Sudjana and Rivai which mentions among other things the benefits of learning media in the learning process of students that is, can foster student motivation because teaching will be more interesting, so that students can understand and allow mastery and achievement of teaching goals.

**Conclusion**

Based on the purpose of research on the application of comic media to improve cognitive and affective learning outcomes of students on straight motion material it can be concluded that the use of comic media on straight motion material has an effect on increasing student learning outcomes. This is evidenced from the average value of the experimental class pre-test 33.4, and after the implementation of comic media in learning the average value of the experimental class post-test to 77.8, and strengthened with the results of the hypothesis test that shows the value of l that is 3 , 31> 1.68 for the significant level of 95% and α = 0.05 so it is accepted.

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