Abstract

This research aims to determine the effect of GI type cooperative learning model and learning motivation, as well as the influence of interaction model of cooperative learning type GI and motivation to physics learning outcome. The population in this research is the students of class XI IPA SMAN 1 Pesanggaran-Banyuwangi, which consists of 2 class groups that are homogeneous, the control class and experimental class. The data used in this research are primary data collected from pre-test and post-test for learning outcome, and questionnaires for student motivation data. The instrument before it is tested has been tested for its validity and reliability. The statistical test uses two way anava analysis method with the help of SPSS computer program. The results showed that (1) there were significant differences between groups of students using cooperative type of GI learning model with conventional learning model on Physics learning outcome. (2) there is significant difference of influence between high motivated group of students with low motivation toward Physics learning outcome. (3) There is no interaction of GI type cooperative learning model and learning motivation toward student physics learning result at SMAN 1 Pesanggaran. From the results of this research teachers are required to always innovate in choosing a model of learning. Because with the selection of learning models in accordance with the conditions of learners and schools, will be able to improve learning outcome. One of the learning models that can improve learning outcome is with the GI model.

Keywords: Cooperative Type GI Learning Model, Learning Motivation, Learning outcome.
1. Introduction

Education is a very important element to create quality human resources. Therefore education programs should always be reviewed and improved. School data from year to year shows relatively low learning outcomes. Of the 175 students of grade XI IPA SMAN 1 Pesanggaran-Banyuwangi, only 35% achieved the KKM value of 75. While the average 65% has not reached the KKM, so it must be remedial program. One reason is the lack of innovation in learning. Therefore, the researcher took the theme of influence of study group investigation model and student's motivation toward student achievement. Problems in this research are: (1) Is there any influence of cooperative learning model of group investigation type toward physics learning outcome at student of SMAN 1 Pesanggaran-Banyuwangi ?, (2) Is there any influence of student's learning motivation to Physics learning outcome at student of SMAN 1 Pesanggaran- Banyuwangi ?, (3) Is there any interaction influence of cooperative learning model of group investigation type and motivation toward physics learning outcome in student of SMAN 1 Pesanggaran-Banyuwangi ?. While the purpose of conducting this research are: (1) To know the influence of cooperative learning model of group investigation type toward physics learning outcome in students of SMAN 1 Pesanggaran-Banyuwangi, (2) to know the influence of student's learning motivation toward physics achievement at student SMAN 1 Pesanggaran-Banyuwangi, 3) Knowing the influence of interaction model of cooperative learning type of group investigation and motivation on physics learning outcome in students of SMAN 1 Pesanggaran-Banyuwangi.

2. Theoretical Framework and Development of Hypotheses

2.1 Relevant Research

From research about the influence of learning model on student learning outcome that has been done before, the average result there is significant influence. The research was conducted by Astiti (2012), Marsahid (2012), Supriyadi (2013), Kustiani (2013), Siswati (2014), Artini (2015), and many other studies on learning model. But for the motivation to learn, not all the research results states there is influence. The results of which no influence among other research units Astiti (2012) and Supriyadi (2013). While the research of Siswati (2014) stated that motivation has no influence on learning outcome. This can happen because the research by using questionnaire to know the high of student's
motivation can be influenced by research sample controlled by confounding factor, for example student age, gender, student background, and so on.

2.2 GI and Conventional Cooperative Learning Model

In general planning of organizing classes using cooperative techniques Group Investigation is a group formed by the students themselves with consisting of 2-6 people, each group is free to choose a subtopic of the total units of material to be taught, and then make a report group. Subsequently, each group presented its report to the entire class, to share and exchange information on their findings (Slavin, 2008).

In a large Indonesian dictionary (1991: 523), conventional means based on custom or traditional. Thus, conventional learning is the usual teaching done by the teacher. In general, conventional learning is a more teacher-centered learning.

2.3 Motivation and Learning Outcome

Motivation is a mental force that drives learning that comes from various sources. Students learn because driven by mental strength in the form of desire, attention, will, or ideals. The mental strength can be low or high (Sardiman, 2011). Motivation is divided into 2 groups, namely: (1) Intrinsic motivation is the motivation in yourself to do something for the sake of something itself, (2) Extrinsic Motivation is doing something to get something else. Extrinsic motivation is often influenced by external incentives such as rewards and punishments. Learning outcome is an indicator of the absorption (intelligence) of students (Denny Mahendra Kushendar, 2010). The learning outcome is influenced by beberpa factors, namely: (1) The internal factors, such as intelligence, aptitude, interests, and motivations of each individu, (2) External factors, such as family circumstances, experiences, environment, learning model etc. The function of learning outcome, are: (1) As an indicator of the quality and quantity of knowledge of learners, (2) As a symbol of the fulfillment of curiosity desire, (3) As an information material in educational innovation, (4) As an internal and external indicators of an institution education.

2.4 Hypothesis Development
Hypothesis of this research are:

**H1.** There is the influence of cooperative learning model type group investigation of the physics learning outcome in students of SMAN 1 Pesanggaran-Banyuwangi.

**H2.** There is influence of student's learning motivation on physics learning outcome at student of SMAN 1 Pesanggaran-Banyuwangi.

**H3.** There was an interaction effect cooperative learning model type group investigation and motivation towards researching physics at the learning outcome of students of SMAN 1 Pesanggaran-Banyuwangi.

### 3. Research Methods

#### 3.1 Population and Sample Research

The research was conducted in SMAN 1 Pesanggaran Banyuwangi in November 2016. The population in this research were students of class XI IPA SMAN 1 Pesanggaran-Banyuwangi as many as 70 students. The sampling technique in this research is purposive cluster sampling. Sampling techniques based on certain considerations and characteristics. In this research, students who were sampled were students of XI IPA class A and class B, each of which amounted to 35 students and has the same characteristics.

#### 3.2 The Design and Type of Research

This research used an experimental method, with a design pretest-posttest control group design. Experiments conducted in two classes, namely class A and class B, the sample is a sample treated with the method of GI type cooperative and control samples using conventional methods.

<table>
<thead>
<tr>
<th>O₁</th>
<th>X</th>
<th>O₂</th>
</tr>
</thead>
<tbody>
<tr>
<td>O₃</td>
<td></td>
<td>O₄</td>
</tr>
</tbody>
</table>

Information:

O₁, O₃ = Student learning outcome before getting a cooperative learning model type group investigation the experimental class, and conventional learning models in the control class.

O₂, O₄ = Student learning outcome after obtaining a cooperative learning model type group investigation the experimental class, and conventional learning models in the control class.
Based on the type, this research included Quasi Experiment research and survey research. Quasi-Experimental research is research using experimental and control groups were treated by using draft pretest-posttest control group design as a means of data collection. While the survey research is a research that uses a questionnaire as a means of data collection (Sugiyono, 2012).

3.3 Identify Variables

Variables of research is anything in the form of what is determined by the researchers to be studied, so obtained information about it, to then be drawn conclusion (Sugiyono, 2007). The independent variable in this research is a model of learning Cooperative Group Type Investigation and motivation to learn. While the dependent variable is the learning outcome.

3.4 Operational Definition

In order not to misunderstand with the term used in this research, the authors explain the term used in this research:

a. Cooperative Learning Model Group Investigation

GI cooperative learning model is planning a class organization which was created by the student group consisting of 2-6 people, each group is free to choose a subtopic of the total units of material (subject) to be taught, and report group. Subsequently, each group presented its report to the entire class, to share and exchange information on their findings (Slavin, 2008)

b. Conventional Learning Model (Lecture)

The conventional learning model (lecture) is the way the teacher conveys the teaching materials material with a direct oral explanation of the students. This method is a more active teacher and students only listen and give answers when asked so that if the teacher is less interesting in the delivery then the students are less attention and sometimes sleepy (Suryobroto, 2009).

c. Motivation to learn

Motivation to learn is one that encourages or encourages students to learn which includes internal (external) and external (Santrock, 2004) encouragement.

d. Learning Outcome Learn

Learning outcome is the result that has been achieved by students after the learning that in this research only focus on the cognitive aspect (Saefrudin Azwar, 2000).
e. Physics Subjects

Physics subjects in question is the curriculum or syllabus of physics subjects high school class XI IPA. The material used in this research is about Business and Energy.

3.5 Data Collection Methods

Data collection methods are techniques or methods used to collect data. Data collection techniques used to conduct this research are:

a. Learning outcome Test

To obtain data in the form of Physics learning outcome, researchers use research instruments in the form of ability tests (learning outcome test) consisting of 20 items. Before use, the test needs to be tested first to find out the questions that meet the requirements of good test preparation, including the validity and reliability.

b. Questionnaire Motivation Learning:

Data in the form of learning motivation is obtained by using questionnaire or questionnaire consisting of 20 questions. Each item has 5 choices. Description of the provisions of scoring in the questionnaire is as in tables 3.1 and 3. The following:

| Table 3.1 Distribution Score For Statement of Problems That Support (+) |
| --- | --- | --- | --- | --- | --- |
| Answer | Strongly agree | Agree | Doubtful | Disagree | Strongly Disagree |
| Score | 5 | 4 | 3 | 2 | 1 |

| Table 3.2 Score Distribution For Problem Statement Does Not Support (-) |
| --- | --- | --- | --- | --- | --- |
| Answer | Strongly agree | Agree | Doubtful | Disagree | Strongly Disagree |
| Score | 5 | 4 | 3 | 2 | 1 |

3.6 Data Analysis Methods

a. Test Instruments
Research instruments to be used in research, before use should be tested first quality. To test the quality of the instrument used 2 kinds of test, namely test validity and reliability test for learning outcome test and motivation.

b. Validity test

In this research the validity of instrument test is calculated by using product moment formula (Sugiyono, 2012: 183), that is by formula:

\[ r_{xy} = \frac{N \sum xy - \sum x \sum y}{\sqrt{(N \sum x^2 - (\sum x)^2)} \sqrt{(N \sum y^2 - (\sum y)^2)}} \]

Information:

\( r_{xy} \)  =  Product moment correlation coefficient between x and y  
\( X \)  =  The value of the variable X  
\( Y \)  =  The value of the variable Y  
\( N \)  =  number of subjects  
\( \Sigma \)  =  Sigma Total score  

\( r_{xy} \)

\[ r_{i} = \frac{2r_s}{1 + r_s} \]

Information:

\( r_{i} \)  =  Coefficient of correlation whole matter  
\( Rs \)  =  Correlation coefficient about half of which were found to determine the level of correlation can be used dollar as follows:

1. 0.80 < \( r_{i} \), 1.00 correlation is very high
2. 0.60 < \( r_{i} \), 0.79 high correlation
3. 0.40 < \( r_{i} \), 0.59 correlation was
4. 0.20 < \( r_{i} \), 0.39 lower correlation
5. 0.00 < r₁, 0.19 correlation is very low

3.7 Hypothesis Testing

Hypothesis test is done to find out whether the hypothesis in the research accepted or rejected (Sugiyono, 2012: 192). In this research hypothesis test using analysis of variance (anova) two lane by using formula:

\[ F_h = \frac{R^2/k}{(1-R^2)/(n-k-1)} \]

Information:

\( F_h \) : Double correlation coefficient  

k : The number of independent variables  

n : The number of members of the sample  

The data obtained were then tabulated using a 2x2 factorial design and analyzed using F test statistic (using two-way anova)

Table 3.3 Factorial Design 2 x 2

<table>
<thead>
<tr>
<th>MOTIVASI</th>
<th>METODE</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kooperatif Tipe Group investigation (A1)</td>
<td>Konvensional (A2)</td>
<td></td>
</tr>
<tr>
<td>TINGGI</td>
<td>A1.B1</td>
<td>A2.B1</td>
<td></td>
</tr>
<tr>
<td>(B1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(B2)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Information:

A1.B1: Cells group of students who were given a cooperative learning type group investigation and have high motivation to learn.  

A2.B1: Cells group of students who were given conventional learning and motivated.  

A1.B2: Cells group of students who were given a cooperative learning type group investigation and have low learning motivation.  

A2.B2: Cells group of students who were given conventional learning and have low motivation.
After analysis of statistical data to Microsoft Excel and SPSS like the above steps (Trihendradi, 2012), then consulted with the F test distribution table, so it can be concluded as follows:

- If the results obtained by analysis of the results of $F_{\text{arithmet}} < F_{\text{table}}$, then $H_0$ is rejected and $H_1$ accepted.
- Likewise, if the results of the analysis of the results obtained $F_{\text{count}} > F_{\text{table}}$, then $H_0$ is accepted and $H_1$ rejected.

4. Discussion

4.1 Research Result

Respondents were students of class XI IPA 4 and IPA 5 SMAN 1 Pesanggaran which amounted to 70 students, and divided into experiment class and control class. Data influences GI cooperative learning model and learning motivation towards learning outcome of physics at SMAN 1 Banyuwangi Pesanggaran overall as in the table below.

Table 4.1 Summary of Data Research Effects of Cooperative Learning Model GI And Motivation on Learning outcome

<table>
<thead>
<tr>
<th>Model</th>
<th>Motivasi</th>
<th>Tinggi</th>
<th>Rendah</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kooperatif tipe GI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>27</td>
<td>8</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Mean</td>
<td>81,85</td>
<td>74,38</td>
<td></td>
<td>80,14</td>
</tr>
<tr>
<td>Sd</td>
<td>9,109</td>
<td>4,955</td>
<td></td>
<td>8,869</td>
</tr>
<tr>
<td>$\sum X$</td>
<td>2210</td>
<td>595</td>
<td></td>
<td>2805</td>
</tr>
<tr>
<td>Konvensional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>18</td>
<td>17</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>Mean</td>
<td>74,72</td>
<td>67,94</td>
<td></td>
<td>71,43</td>
</tr>
<tr>
<td>Sd</td>
<td>6,057</td>
<td>4,351</td>
<td></td>
<td>6,251</td>
</tr>
<tr>
<td>$\sum X$</td>
<td>1345</td>
<td>1155</td>
<td></td>
<td>2500</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>25</td>
<td></td>
<td>70</td>
</tr>
<tr>
<td>Mean</td>
<td>79</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sd</td>
<td>8.7</td>
<td>5.401</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\sum X$</td>
<td>3555</td>
<td>1750</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From table 4.1 above shows that:

a. There are significant differences between the groups of students who got a type of cooperative learning model that uses the Group Investigasion with conventional learning models in physics
learning outcome indicated by the mean value on the interpretation of learning generated models of GI type Cooperative Learning 80.14 and 71.43 with conventional learning models.

b. There is a significant difference between high motivated and low motivated students in Physics learning outcome as indicated by mean niali on highly motivated learning pretensions 79 and low motivation 70.

c. There was no significant interaction effect between GI cooperative learning model with physics motivation on learning outcome indicated by the mean value of the cooperative group GI mode with low motivation 74.38 and conventional groups with low motivation 67.94.

4.2 Analysis of Research Results

Hypothesis testing is done by analysis vaktorial two lines with the aim to investigate the differences in the application of learning models and student motivation, and the interaction effect (interaction effect) are both on the learning outcome of Physics. A summary of the results of two-lane vaktorial analysis is included in the table below.

Table 4.2 Analysis of Anova Two Path Analysis

<table>
<thead>
<tr>
<th>Tests of Between-Subjects Effects</th>
<th>Dependent Variable: Learning outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>source</td>
<td>Type III Sum of Squares</td>
</tr>
<tr>
<td>corrected Model</td>
<td>2075.951       a</td>
</tr>
<tr>
<td>intercept</td>
<td>323191.648</td>
</tr>
<tr>
<td>Model_Belajar</td>
<td>665 545</td>
</tr>
<tr>
<td>Motivation to learn</td>
<td>735 441</td>
</tr>
<tr>
<td>Model_Belajar * Motivasi_Belajar</td>
<td>1,752</td>
</tr>
<tr>
<td>Error</td>
<td>3255.835</td>
</tr>
<tr>
<td>Total</td>
<td>407375.000</td>
</tr>
<tr>
<td>corrected Total</td>
<td>5331.786</td>
</tr>
</tbody>
</table>

a. R Squared = .389 (Adjusted R Squared = .362)

The result of anova two-lane calculation above, can be concluded as follows:
a. First Hypothesis

There are differences in Learning outcomes of students taught by conventional learning models and the use of cooperative learning model of GI. This conclusion is based on analysis of test results of Anova two lanes in Table 4.2, the value (F hit) 13.491 > (F table) 3.13 at significance level (α) of 0.05 and P value (Sig.) 0.000 < (α) 0.005. This means that H₀ is rejected and H₁ accepted.

b. Second Hypothesis

There are differences in student Learning outcomes that have high learning motivation compared with those with low learning motivation. This conclusion is based on analysis of test results of Anova two lanes in Table 4.2, the value (F hit) 14.908 < 3.13 (F table) at significance level (α) of 0.05 and P value (Sig) 0.000 < (α) 0.05. This means H₁ received and H₀ is rejected.

c. Third Hypothesis

There is no interaction cooperative learning model of Group Investigation and motivation to learn the results of researching physics at SMAN 1 Pesanggaran. This conclusion is based on analysis of test results of Anova two lanes in Table 4.2, the value (F hit) 0.036 < (F table) 3.13 at significance level (α) of 0.05, and P value (Sig) 0.851 < (α) 0.05. This means that H₀ is received and H₁ rejected.

4.3 Interpretation

From the observation and analysis above showed that no significant difference between the interaction GI cooperative learning model with motivation on Learning outcome physics. This is shown from the statistical test with the help of computer program SPSS, obtained F arithmetic (0.036) < F table (3.13), Sig value. 0.851 > 0.05. This happens because students who are equally highly motivated will try to find out a material through various ways. For example, by browsing or also with lessons outside school hours.

From the table 4.1, it appears that the results of learning outcome experimental class is better when compared to the control class. The mean of the experimental group was 80.14. While the control class is 71.43. This shows that the application of learning model to students can improve Learning outcomes.

From the data in Table 4.1, it can be seen that the result of student learning outcome with high motivation average is better than low motivated students. Students with high motivation numbers 45 students, Mean of post-test was 79. Meanwhile, students with low motivation totaling 25 students, Mean
of post-test is 70. Therefore, an educator should also be a motivator for the students, with the aim of improve Learning outcomes.

5. Conclusions, Implications and Limitations

5.1 Conclusions

Based on the objectives, the results of research and data analysis can be concluded things as follows:

a. A significant difference between the groups of students who receive learning using cooperative learning model GI with students who use conventional learning models in improving Learning outcome Physics.

b. There is a significant influence between groups of students who have high motivation and low motivation in improving Physics learning outcome.

c. No significant difference between the interaction of the use of GI type learning model with the motivation to learn to learning outcome learn physics.

5.2 Implications

An educator should be able to select and sort the learning model which can boost Learning outcomes for learners one type of cooperative learning model of Group Investigation, or with other learning models adapted to the conditions of the school, learners and materials to be delivered.

Motivation is a relatively fixed nature in a person, which has a great influence on learning outcome, because with the motivation someone will be able to do something, otherwise without the motivation impossible someone can do something. With the motivation that arises from within the students themselves, it will be able to produce better results.

For educational managers are expected to create innovative policies, namely by providing opportunities for educators to follow the activities of self-development through MGMP (Musyawarah Guru Mata Pelajaran) according to the subjects that diampu. Besides education managers should also provide the needs of their students in the school, such as a lab, library, hotspots, and so on.

5.3 Limitations

As we all know, the learning model is of many kinds. This research only discuss about the influence of GI learning model and the motivation and interaction of both to increase learning outcome. This
means that the GI learning model is not the only determinant of the success of a lesson. Educators and other researchers can use other learning models that can stimulate student activity and creativity.

Reference