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# The Effectiveness of Amper Cooperative Learning For Improving Students' Achievement

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***Abstract:*** *Students' poor performance especially in Physics at SMAN 7 Bulukumba is the impact of monotonous teaching and learning process (teacher-centred). Besides, study group method in the school is applied ineffectively due to the over member for each group. To overcome these problem, it needs a teaching method which emphasizes students as a human being who have potential to learn or collaborate. The problem statement of this research is whether the cooperative learning AMPER effective to improve students' learning achievement. This research applied quasi-experimental with one group pre-test and post-test design ($O_1$ X $O_2$). The samples of the research are the students from Class XII IPA 1 of SMAN 7 Bulukumba, Academic Year of 2015/2016. The data collected from students' achievement test which then analysed using descriptive analysis, N-gain, and t-test correlated. The result showed that the students' achievement related to their KKM (minimum passing level) is in the good category and improved significantly. So that, it can be concluded that the application of CT-AMPER learning method meet the effective criteria. Thus, the CT-AMPER method can be implemented as one of the learning method in teaching and learning process, especially in a class with high number of students.*
***Keywords:*** *Effectiveness. Cooperative Learning. Students' achievement*

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## I. INTRODUCTION

The paradigm of education in Indonesia is currently undergoing a change. A strong awareness has been awakened among the policy makers to establish the value of the nation's character at each lesson. The objectives are to make the learning process become more significant for the students. It also builds students' character and provides adequate provision to a higher education when entering job's world with a better prospect.

In accordance with the government, they have set a School Unit Level Curriculum (*KTSP)* in PP. No. 19 Year 2005 as a solution of the education challenge today. To support the implementation of the curriculum, the government make various efforts such as introduce SBC to the involved parties and also established the eight educational standards. Nevertheless, the education level in this country has not reach the goal of national education. SMAN 7 Bulukumba is one of the schools that has implemented KTSP since 2006. During this time, students' achievement were not encouraged (low learning outcomes) especially in Physics. It is caused by some factors such as too many students in one class. Moreover, teachers were monotonous in the process of teaching and learning. To overcome these problems, it needs a learning method which more emphasizes the students as a human being who have potential to learn or collaborate. With this method, it is expected that the students in the class become more active in learning, to show their opinion or accept others, and have a high confidence (Zamroni, 2000:28). As for the learning method, the research used a cooperative learning called JIGSAW.

The implementation of Jigsaw cooperative learning method still has limitations in its application, especially for a class with a high number of students. Due to its limitation, Jigsaw cooperative learning method is modified into cooperative discussion method. This modification is a new learning method that can accommodate the class with a high number of students.

From the explanation above, this research conducted AMPER Cooperative Learning Method. This learning method is the combination between JIGSAW Cooperative Learning and discussion method. This effort made to improve students' achievement in Physics, especially for cognitive learning.

Based on the description above, the research question was formulated as follows: Does AMPER Cooperative Learning effectively improve students' learning outcomes?

## II. RESEARCH METHOD

This research applied quasi-experimental method which is defined as an experiment with treatment. It also measures the impact of the experimental units but does not use an assignment to create a comparison in order to find changes during the treatment (Cook & Campbell, 1979). Method of the data collection conducted through quasi-experimental using one group pre-test and post-test design (Arikunto S, 2009, p.212) describe as follows;

| $O_1$ | X | $O_2$ |
|---|---|---|

Where:

$O_1$ = The result of pre-test before the treatment
X = Given treatment (cooperative learning AMPER)
$O_2$ = The result of post-test after treatment

The research was held at SMAN 7 Bulukumba South Sulawesi Indonesia. The samples were from Class XII IPA 1 consisted of 31 students. This is accomplished with the consideration based on data variations. Success indicators of the research can be measured by the effectiveness of the CT-AMPER learning methods*)* which measured by observing the development of the student outcomes in teaching learning process or comparing students' scores after treatment (O2) with

the score before treatment (O1). To get a clear limitation on variable of this research, the operational definition are described as follows:

a. CT-AMPER is a cooperative learning method developed from JIGSAW cooperative learning and debate cooperative learning.
b. Physics learning outcomes are the result that student obtained after learning Physics at the cognitive domain.

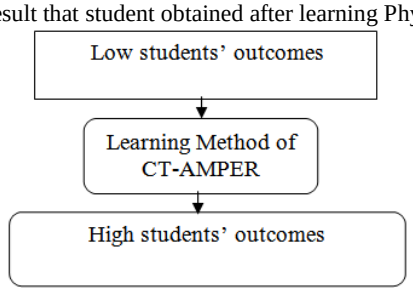


**Figure 1.** Conceptual framework

## III. THEORETICAL REVIEW

**AMPER Cooperative Learning Method**

According to social learning theory by Albert Bandura which used external reinforcement and internal cognitive explanation to understand how we learn from others. Also, behaviouristic theory from Gage and Bane discussed about behavioural changes as a result of the experience. The cooperative learning type AMPER is a manifestation from these theories. Cooperative learning type AMPER is a modified embodiment of Jigsaw cooperative learning with cooperative learning debate. The syntax of cooperative learning method AMPER reflects a combination of syntax Jigsaw cooperative learning with debate cooperative learning. Thus, syntax AMPER cooperative learning method becomes a new syntax which varied in five steps, namely: 1) Listening, 2) Marking, 3) Presenting, 4) Evaluating, and 5) Reconstructing.

`The study group illustration of cooperative learning type AMPER can be seen in figure 2 below:

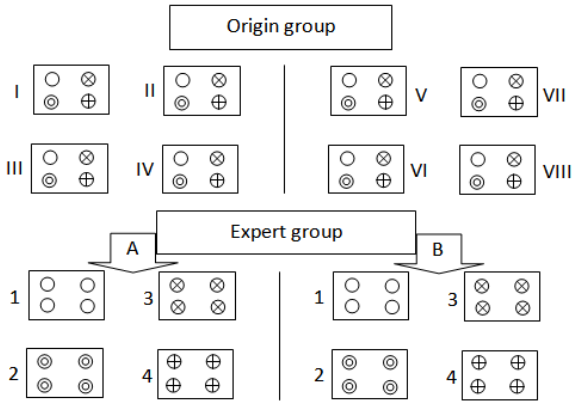


**Figure 2:** Study group illustration of cooperative learning type AMPER

a. Syntax

The syntax of CT-AMPER cooperative learning consists of five steps namely: 1) Listening; 2) Marking; 3) Presenting; 4) Evaluating; and 5) Reconstructing. The activities for each step in the syntax of CT-AMPER learning method are presented in table 1 below:

**Table 1** The Syntax of CT-AMPER learning method

| Phases | Teaching Learning activities | |
|---|---|---|
| | Teacher's activities | Students' activities |
| Step–1 Listening | - Delivering the objective of learning<br>- Linking the previous lesson with the present lesson<br>- Motivating the students<br>- Presenting the point of learning material to the students through demonstration | - Paying attention to the teacher's explanation<br>- Answering the question from the teacher.<br>- Paying attention to the teacher's explanation |
| Step–2 Marking | - Explaining to students how to form a study group and organizing students into CT-AMPER study groups according to the illustration.<br>- Guiding expert group when discussing the material and solving the task. | - Arranging seats and setting groups based on the CT-AMPER study group illustration. (Origin Group / Expert)<br>- Each member of the expert groups discuss the material and complete the task |
| Step–3 Presenting | - Guiding the expert group to make a presentation and debates (as moderator)<br>- Guiding the students to make a conclusion about the material. | - Expert group A presents their work while the other groups respond and vice versa.<br>- Making a conclusion about the learning material. |
| Step – 4 Evaluating | - Guiding the expert group back to the origin group | - The members of the origin group make same perception of the learning materials.<br>- Answering evaluation's questions |

| | | |
|---|---|---|
| | - Evaluating student outcomes about the material that they have learned. | |
| Step – 5 Reconstructing | - Giving award for each excellent student and each excellent group. | - Paying attention to the information in learning progress |

b. Social system
In AMPER cooperative learning, two or more people depend on each other to achieve common goal. Related to that, the students must ensure that their goal will be achieved if others do the same thing. So that every member of the group is responsible to their group's success. The students which are taught by cooperative learning will be encouraged to collaborate in several projects and complete it together.

c. Principle reaction
The involvement of teachers as mentors and facilitators in the learning method of CT-AMPER is needed in terms of; (a) providing learning resources, including books (b) delivering information about the material, and (c) guiding learners in discussions and presentations in order to understand and able to solve problem related to teaching materials.

d. Supporting system
Supporting system of learning method are every tools which support the learning process, such as teachers, unlimited library resources, and access to a learning environment which full of information (online media)

e. The Impacts of Instructional and Companion
The impacts of instructional that expected in CT-AMPER method is the accomplishment of teaching materials, material comprehension and skill of problem solving related to teaching materials. While the impacts of companion that expected in CT-AMPER method is the rise of various social skills of the students.

**Learning achievement**

Definition of achievement refers to an acquisition of an activity or process that changes the functional input (Purwanto, 2011, p.44). While the study conducted as the efforts for individual behavioural changing. Behavioural changing is the acquisition of the learning outcomes. In addition, cognitive learning that the students obtained also role for affective and psychomotor learning.

In essentials, learning outcome is the ability which a child gained through learning process. Learning itself is a process by someone who is trying to obtain permanent behaviour (Mulyono Abdurrahman, 2003: 37), as well as learning outcomes become the result of an interaction between learning and teaching (Dimyati, Midjiono, 2006). So, the learning achievement in essence is the change of students' behaviour includes cognitive, affective, and psychomotor. It seems that every teacher expects students' learning achievement will be improved after carrying out learning process.

## IV. RESULTS

The description of students' learning achievement after being taught through CT-AMPER learning method became as one indicator in teaching and learning process which was the outcome of cognitive learning as well. The results of the descriptive analysis of the students' test results before and after being taught through learning method of CT-AMPER (pre-test and post-test) can be seen in table 2 below:

**Table 2** the results of descriptive analysis of students' outcomes

| Parameter | Pre-test ($O_1$) | Post-test ($O_2$) |
|---|---|---|
| Subject | 31 | 31 |
| Mean | 74.89 | 84.68 |
| Median | 76.67 | 86.67 |
| Variance | 168.17 | 131.93 |
| Standard Deviation | 12.96 | 11.49 |
| Minimum Score | 56.67 | 58.33 |
| Maximum Score | 93.33 | 100 |
| Range | 36.66 | 41.67 |

Table 2 above shows that teaching and learning on the subject Development of Atomic Theory obtained average students' score of 74.89 for pre-test with a standard deviation of 12.96. The maximum score is 93.33 and 56.67 for its minimum score. Thus, the score range is 36.66. For the average post-test score is 84.68 with a standard deviation of 11.49. The maximum score is 100.00 and 58 for its minimum score, while the score range is 41.67. Statistical score of students learning in the trial implementation of the CT-AMPER learning method showed a significant increase.

Furthermore, the completeness of the students' outcome after being taught through CT-AMPER can be seen in figure 3 below;

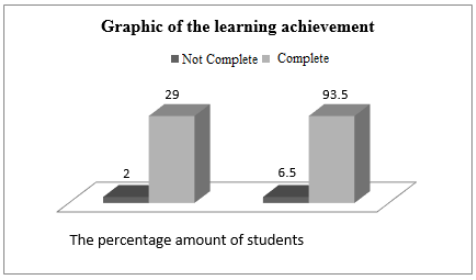


**Figure 3.** Graphic of completeness of the students' achievement

Figure 3 above shows the percentage of students' study completeness after being taught by the CT-AMPER method. There were 31 students as the research samples in which around 29 or 93% reached minimum passing level. The other two students or around 6.5% of the samples did not reach the minimum passing level. This indicates that most students who have been taught by CT-AMPER method are able to answer questions in school exercises or tests. It can also be concluded that more than 70% of the samples reached the minimum passing level which means that the application of CT-AMPER method meet the criteria of effectiveness.

To determine the significance level of the students' outcome, the data collected by using Normal Gain formula (N-Gain). It obtained an average score of 0.42 and indicates that the improvement of students learning achievement after being taught with CT-AMPER method is in middle category. Furthermore, the result of N-Gain analysis are summarized as shown in Table 3 below:

**Table 3:** The summarize of the Pre-test – Post-test using N-Gain analysis

| Score <g> (n) | Criteria | Amount of respondent | Percentage |
|---|---|---|---|
| 0,71 - 1,00 | High | 4 | 12,90 |
| 0,31 - 0,70 | Average | 16 | 51,61 |
| 0,00 - 0,30 | Low | 11 | 35,48 |

From the table 3, it can be explained that out of 31 students who followed the trial of CT-AMPER teaching method there were four or 12.90% of the students in high category, 16 or 48.39% students in medium category, and 11 or 35.48% students in low category. Therefore, it can be concluded that there are 20 or 64.51% students who reached medium and high criteria for their learning outcomes after participating in CT-AMPER learning method.

The significance level of AMPER effectiveness as the cooperative learning method to improve students learning outcomes, t-test correlated analysis also conducted. The test result can be seen in table 4 below:

**Table 4**. The result of t-test collaborated THB analysis

| $X_1$ | $X_2$ | $n_1$ | $n_2$ | $S_1$ | $S_2$ | S | t |
|---|---|---|---|---|---|---|---|
| 74,89 | 84,68 | 168,17 | 131,93 | 12,96 | 11,49 | 12,336 | 6,824 |

Table 4 above shows that the t-count is equal to 6.824 and t-table 2.024 at the level of $\alpha = 0.05$. Thus, t-count is greater than t-table. It can be concluded that students' test result increased significantly after being taught through CT-AMPER method.

## V. DISCUSSION

The result of this research is specialized to the effectiveness of CT-AMPER learning method for improving students' learning achievement. The criteria for the effectiveness of CT-AMPER teaching method is referred to students' learning achievement. If it meets the classical level, at least 80% of the students, then it can be said that minimum passing level of the school has been successfully reached. After implementing CT-AMPER method, it is found that most students have reached high category. Also, the students have been reached classical learning completeness *(ketuntasan belajar klasikal)*. The results of pre-test and post-test data through N-Gain analysis showed that the learning outcomes of Class XII students of SMAN 7 Bulukumba are improved after being taught significantly by CT-AMPER method. Students' interaction in each group has a positive effect on their learning outcomes. The interaction give the students' access to share knowledge to each other which made both students of origin and expert group acquired the equal knowledge.

The significance level of the effectiveness of AMPER cooperative learning to improve students' learning outcomes is also reinforced by the results of t-test correlated analysis. The result of t-test correlated analysis showed that t-count is greater than t-table. Thus, it can be concluded that students' learning outcomes significantly increased after being taught through learning method of CT-AMPER.

Based on the discussion above, it can be generally assumed that the improving CT-AMPER method is effective to be implemented in *Development of the Atomic Theory* material. In addition, students' interaction which is built up in groups using CT-AMPER learning method has given a positive effect on their learning outcomes. This is equal to its cognitive description (Riyanto Y, 2010:9) which stated that science is built in an individual through a continuous process of interaction with the environment. Aligned with Ibrahim, et.al. Cooperative learning has a positive impact for a student with low learning outcomes.

## VI. CONCLUSION

CT-AMPER teaching method that has been implemented, especially in "development of Atomic Theory" material is effective to improve the students' achievement.

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