The Effect Of Metacognitive Scaffolding Strategy Embedded In Cooperative Learning Model On Students' Writing Achievement At Grade XI Of SMAN 4 Kendari

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ABSTRACT

This study aimed to investigate the effectiveness of metacognitive scaffolding strategy which is embedded in cooperative learning model in teaching writing to students at grade XI of SMAN 4 Kendari. In this study, quantitative data were used to examine the effectiveness of metacognitive scaffolding strategy on students' writing, whereas qualitative data were used to describe the process involved in the teaching which applied the metacognitive scaffolding strategy. Three research questions were posed: (1) did the students taught under the metacognitive scaffolding strategy produce better writing than their counterparts who were not instructed in the same strategy?; (2) what were the writing scores gained by the students who learnt via the metacognitive scaffolding strategy?; (3) how was the metacognitive scaffolding strategy implemented in the process of teaching writing? The study was conducted at SMAN 4 Kendari to class XI students who enrolled in the 2015/2016 academic year. Total samples were 60 students which were split into an experimental class and control class. The samples were drawn using the convenient sampling technique. Instruments of the study included a writing test, interviews, and observation sheet. In the experimental

class, a pre-test was administered to obtain data about students' knowledge prior to treatment which applied the metacognitive scaffolding strategy in the teaching of writing, and a post-test was run to determine the students' writing scores after receiving the treatment. In the control class, the teaching of writing applied a conventional method that was usually been used in the school. The students in this class also took a writing test, the results of which were used as a comparison to the experimental class. Additionally, some students and teachers were interviewed to obtain qualitative data and some observations were conducted during treatment in the experimental class. The results show that there was a significant difference between the pre-test scores and the post-test scores in the experimental class compared to the control class, with the students taught using the metacognitive scaffolding strategy gained higher scores than those who were not. Paired sample t-test was run to compare the pre- and post-test scores gained by both classes before and after treatments, whereas independent sample t-test was used to analyze the difference between gained scores recorded by the two classes. Furthermore, it was revealed that the process of teaching writing using the metacognitive scaffolding strategy has run well according to the lesson plan.

1. INTRODUCTION

As Vygotsky (in Lambas, 2004) said that each child has their own Zone of Proximal Development (ZPD) which is defined as "gap" between actual development and potential development level. Actual development level is child capability level to solve certain problems independently while potential development level can be reached by children if they have guidance or assistance from others competent people.

According to Vygotsky's theory above, it can be concluded that to reach potential development of students, students should be given assistance or guidance which is called scaffolding in learning English. Giving scaffolding in teaching English is based on Vygotsky's theory where human is social creature. Because of that, either students themselves or teacher should give a hand to the students who still have problem in learning English in the classroom.

In line with giving scaffolding to the students, researcher is also interested to do metacognitive scaffolding in doing the research. Metacognitive scaffolding here is to give brief instruction or guidance to the students about what they will think, plan, do and evaluate. As we know, metacognition is related to someone's higher thinking level

in which they have awareness about the importance of something. In this case, for students they should have awareness of studying properly in order to have good marks on every test they had as their learning outcome.

Moreover, other research result shows that students who are able to acquire or learn properly in highest level and also acquire information about practicing in metacognitive strategy (namely: planning, monitoring, and evaluating), also have better skill to regulate their learning. Besides, another shows that students who are competent to understand and regulate their cognition and also aware of their ability, indicate that they have more strategic thinking ability than they who are not aware of their cognition system.

In addition, researcher also has interest to apply metacognitive scaffolding strategy in cooperative learning model. As Slavin (1990) defines that cooperative learning is a type of learning model which provides teamwork where students work together to learn and are responsible for their teammates' learning as well as their own. Four principles of cooperative learning model are simultaneous interaction, equal participation, positive interdependence, and individual accountability. It clearly shows that cooperative learning is well known learning model which require students to work in groups, learn together, and achieve same grades among others in group.

Conversely, there are several researches about scaffolding, metacognition and also cooperative learning model that had conducted. One of the research them research entitled "The Implementation of Scaffolding in Improving Students Activeness in Writing". The result shows that scaffolding can improve students' activeness in writing English on students at SMAN 15 Padang. Whereas, another research entitled "*Hubungan antara kemampuan metakognisi dengan kemampuan menulis paragraf deskriptif siswa kelas X SMAN 2 Perbaungan tahun ajaran 2012/2013*", shows that there is a significant correlation between metacognition skill and students' writing ability. Those two samples of research are truly different with the present study. In which, the present study wants to reveal whether there is significant change of students' writing achievement or not.

Therefore, based on those above explanation, researcher wanted to fill the gap by conducting a research about metacognitive scaffolding strategy in which in its' implementation, it is arranged in cooperative learning model, so that the time which used will be more efficient.

2. LITERATURE REVIEW
2.1. Scaffolding
Scaffolding refers to an effort to give assistance (e.g. giving cross questions) from the teacher when the students find difficulties in completing their task (Indahwati, et. al., 2013). Besides, scaffolding can be meant as learning support for students in helping them to complete their learning process which cannot be solved by themselves. Furthermore, Vygotsky states that teacher also have to be aware that in learning process, students must have their chance to develop their zone proximal development

through learning and developing themselves (Budiningsih, 2011). On the other hand, teacher needs to provide any kinds of assistance for their students, in terms of cognitive scaffolding.

Utilizing scaffolding in the present study refers to the second and third hierarchy levels which proposed by Anghileri. It is because the first level, environmental provisions are most suitable with elementary and kindergarten students in which at that time students play much more than in junior or senior high school. On the other hand, in the second level namely explaining, reviewing and restructuring, students are asked to understand a problem, do reflection, correct the answers and rearrange the possible correct answers. While, in the third level namely developing conceptual thinking, students are asked to find other alternative solutions to solve the problems found then discuss the answers with their friends.

2.2. Metacognition

Metacognition refers to a higher thinking level, involving the active control or metacognitive processes that are tangled with learning process. Livingston (1997) states that metacognition is related to awareness and monitoring of cognition system and also functioning cognition system. Like O'Neil and Brown (1997) propound the concept of metacognition as a process in which someone thinks about his thinking in order to develop strategy to solve problems. Moreover, according to Huitt (1997), metacognition is defined as someone's knowledge about his cognitive system, someone's thinking about his thought, and as someone's essential skill in "learning to learning".

2.3. Metacognitive Scaffolding Strategy in the Study

Metacognitive scaffolding strategy in the present study extends questions related to metacognition skill (planning, monitoring and evaluating) which can direct students to improve their thinking process in solving problems. In order that metacognitive scaffolding strategy can be utilized properly, it is necessary to formulate the indicators of metacognitive scaffolding strategy which will be utilized in teaching writing. The indicators are formulated in Table 2.1 below.

Writing Stages	Metacognition Activity	Indicator of Metacognitive scaffolding strategy
Thinking (selecting a topic, exploring the ways to	Being aware of the process and the result in evolving plan when planning and selecting topic/ideas, etc.	• Thinking about the topic • Thinking about the writing steps • Thinking about the ideas

develop it, and devising the strategies of organization and style)	Being aware of the process and the result in monitoring when planning and selecting topic / ideas, etc.	• Monitoring conformity of the topic • Monitoring conformity of the writing steps • Monitoring conformity of the ideas
	Being aware of the process and the result in evaluating when planning and selecting topic / ideas, etc.	• Evaluating conformity of the topic • Evaluating conformity of the writing steps • Evaluating conformity of the ideas
Doing / Drafting (writing rough draft)	Being aware of the process and the result in evolving plan when writing rough draft	• Thinking the way to write the planned topic • Thinking the way to write the writing steps • Thinking the way to write the planned ideas
	Being aware of the process and the result in monitoring when writing rough draft	• Monitoring conformity of the way to write the planned topic • Monitoring conformity of the way to write the writing steps • Monitoring conformity of the way to write the planned ideas
	Being aware of the process and the result in evaluating when writing rough draft	• Evaluating conformity of the way to write the planned topic • Evaluating conformity of the way to write the writing steps • Evaluating conformity of the way to write the planned ideas
Revising (doing correction again and again)	Being aware of the process and the result in evolving plan when doing correction	• Thinking the way to revise the written topic • Thinking the way to revise the writing steps • Thinking the way to revise the written ideas
	Being aware of the process and the result in monitoring when doing correction	• Monitoring the way to revise the written topic • Monitoring the way to revise the writing steps • Monitoring the way to revise the written ideas
	Being aware of the process and the result in evaluating when doing correction	• Evaluating the way to revise the written topic • Evaluating the way to revise the writing steps • Evaluating the way to revise the written ideas

2.4. Cooperative Learning

Cooperative learning model refers to the way of dividing students into small groups. Usually, it takes students into 4 or 5 students per group (Slavin, 1990), but sometimes it takes students into some different number of groups (*Cohen*, 1986; *Johnson & Johnson*, 1994; *Kagan*, 1994; *Sharan & Sharan*, 1992). The member of groups must be heterogeneous in term of their skill. It is meant that in each group, there are students in high competence, medium competence and low competence. The purpose of the distribution is that there will be giving and taking process in the groups. Moreover, it should be heterogeneous in terms of ethnic group, gender, religion and economic status if it is possible to be done.

2.5. Research Framework

Assistance or guidance in the present study is related to metacognition skill in which students are expected to manage or control their thinking process including planning, monitoring, and evaluating their thinking process in solving problems in their tasks. At the end of the study, utilizing metacognitive scaffolding strategy is expected can assist students to think about their cognition in order that they will be aware of their thinking process in doing their tasks. Then, it is also expected that students will be better in doing their task. As Woolfolk (1998) argued that metacognition refers to the improving way of awareness about thinking process and learning. In which, that awareness will only be gotten if someone start to plan, monitor and evaluate his cognitive activity.

In addition, metacognitive scaffolding strategy in the present study will be set up in cooperative learning model. Through cooperative learning model, students are expected to be able to have better interaction with their friends in and/or out their groups. They will help each other in doing their tasks, so that they will have better understanding about what have been taught. Finally, it is expected that students will write well than their previous writing which is meant that their writing achievement will also be improved.

3. METHODS

3.1. Research Design

The present study is a quasi-experimental pre- and post-test design which is divided into two groups namely experimental group and control group. Both of the groups were given pre-test before the treatment and post-test after accepting treatment. Experimental group is group of students who were taught using metacognitive scaffolding strategy which is arranged in cooperative learning model whereas control group is group of students who accept conventional teaching and learning method.

3.2. Instruments

Two types of instruments that were administered in this study: writing test and observation sheet. The writing test consisted of pre-test which was given before

giving treatment, and post-test which was given after treatment. This test was required the students to write a short biography text. The time allowed for this test was 90 minutes and length of text that the students need to produce is at least 100 words. In this study, the researcher also used observation sheet to view whether the whole process works in the right track appropriate with the lesson plan

3.3. Teaching Procedure

In applying the treatment on experimental class, these are the teaching procedure used as follow:

a. Researcher presents a lesson via lecture and textbook.

b. Researcher begins to apply cooperative learning model by dividing the students into heterogeneous groups of 4 students. They sit together within their groups and do first activity in the first meeting.

c. Researcher uses STAD technique in which each group has one leader, they who are more knowledgeable within their groups. Students in their groups think what topic should be written (each member plan and provide suggestion), leader monitors the conformity of members' suggestion to the topic, and all members in groups evaluate the chosen topic to be written.

d. Researcher allows students to find information about the chosen topic for each group using WH questions. Students begin to write their first draft.

e. Researcher applies metacognitive scaffolding strategy. It begins when researcher goes around the class and directs students to think and plan what and how they compose the draft, to monitor every step they take during writing, and to evaluate every step they take during writing. Researcher also assists the students in solving their problem during writing.

f. Researcher asks groups' leaders to exchange their members' draft to other person within the group, and then each member revises their friends' draft in terms of content, grammar, and punctuation. Groups' leaders assist their friends in doing revision and turn back their friends' writing.

g. Researcher asks students to write second draft. Here, activities in point 5 and 6 above are repeated until students write their third draft (final draft).

h. Researcher collects students' writing.

In this study, the researcher also observed teaching and learning process which was done during the treatment on experimental class. The observation was related to the indicators of metacognitive scaffolding strategy which were applied on writing process. In this case, the indicators were adapted from Desoete (2007) and Erskine (2009). In summary, it is included in the teaching procedure which is attached in the previous chapter.

After doing observation during four meetings of the treatment, the researcher found that all teaching and learning activities were conducted properly. In addition, activities in the lesson plan were also done properly by the researcher. Furthermore, in doing all writing stages, all indicators of metacognitive scaffolding strategy was fulfilled properly (see appendix 5).

In the first meeting, researcher divided students into heterogeneous groups of 4 students. Researcher divided them into cooperative learning groups (STAD), in which every group has their leader; they who are more knowledgeable than others in their groups. They sat together within their groups and were asked to discuss about social function, generic structure and language features of short biography text. Then, they should found an example of short biography text about popular person. In this meeting, there were only preliminary activities to strengthen students' knowledge before going to the treatment.

In the second meeting, students sat within the groups. Researcher asked them to think what topic should be written in that meeting. In this meeting, metacognitive scaffolding strategy arise during the activities. Firstly, each leader directs their groups to think together, plan and provide suggestion. Group's leader monitors the conformity of members' suggestion to the topic and evaluates the chosen topic with all group's members, in which friends' biography was chosen as the topic. They should write their friends' biography within the groups. Secondly, students began to write their first draft. Each member of the group should choose one of their friends within the groups to be written as the object of their writing. Researcher helped students during the writing process by monitoring and directing them to plan what and how they compose draft. Researcher also directed students to look at every step they taken during writing and to evaluate their draft. However, learning time was over, so that they should take their work home. It would be submitted in the next meeting.

In the third meeting, groups' leaders collected their friends' first draft. Researcher asked them to exchange their draft within the groups. This activity was aimed to revise the first draft, in which the revision was done by their friends within the groups. Each member of the groups might ask their leader if they found any difficulties in revising their friends' draft. It is because the groups' leaders are people who are more knowledgeable than others within their groups, so that they should assist their friends in solving problems found during activities. After that, they turned their friends' first draft back to it's belong to. Then, they began to write the second draft. Before doing it, they thought and planned revision strategies that would be used. They should not have to accept their friends' revision if they thought that what they had written is already correct. Again, in this activity, each member might ask their leader if they found any difficulties. Moreover, students were allowed to ask the teacher (researcher) about the revision from their friends.

In the fourth meeting, just like in the third meeting, students exchanged their second draft to be revised by their friends within the groups. Groups' leaders helped their friends in doing revision. Researcher monitored students' activities during writing. Finally, students wrote their final draft and submitted it to the researcher. From all those above activities, indicator of metacognitive scaffolding strategy had been fulfilled. (See appendix 4: lesson plan). Therefore, it can be inferred that students' writing achievement on experimental class are increased because of the implementation of metacognitive scaffolding strategy was fulfilled properly.

4. FINDINGS AND DISCUSSION
4.1. Descriptive Analysis
Result of the pre-test and post-test scores is compared in order to describe clearly the significant differences of students' writing performance after taught using metacognitive scaffolding strategy. Table 4.1 displays the statistical data showing the comparison between the post-test and the pre-test results on writing achievement of the experimental class.

Table 4.1 Descriptive Analysis of Students' Pre-Test and Post-Test
of the Experimental Class

Students' Score	Post-Test	Pre-Test	Gain Score
Mean	81.4	68.4	13
Std. Deviation	2.266447	1.99107	0.275377
Minimum	77	63	14
Maximum	87	72	15

Table 4.1 shows that the mean score in pre-test is 68.4 while in post-test is 81.4, in which the gain score is 13; Then, the maximum score in pre-test is 72, while in post-test 87 with the gain score is 15; and the minimum score in pre-test is 63, while in post-test is 77, in which the gain score of minimum score is 14. The differences on the gain scores both in pre- and post-test indicates that there is a different effect on students' writing achievement before giving treatment and after giving treatment. It is clear that there is an improvement on students writing achievement after being given treatment under metacognitive scaffolding strategy.

4.2. Inferential Analysis
The computation using *paired sample t-test* both for control and experiment class could be done to find out whether there was a significant effect of teaching writing under web-based instructional program. The result of *paired sample t-test* can be seen in the table 4.2 below:

Table 4.2 Paired Sample t-test of Pre-Test and Post-Test

	Paired Difference		
	Mean	t-value	Sig.(2-tailed)
Pre Experiment – Post Experiment	-13.0	-36.232	0.001
Pre Control – Post Control	-7.23	-13.848	0.001

Based on the above graph, it can be inferred that H_0 is rejected (μ post $\geq \mu$pre) for both experiment class and control class. It means that metacognitive scaffolding strategy gives a significant effect on students' writing achievement on experimental class. On the other hand, students' writing achievement on control class also shows increasing of the score between pre- and post-test. In addition, the computation using

Independent sample t-test could be done to strengthen the findings of paired sample t-test on previous sub chapter. The result of *Independent sample t-test* can be seen in the table 4.3 below:

Table 4.3 Independent Sample t-test of Pre-Test and Post-Test

Independent Sample t-test

	Levene's Test (F)	Mean Difference	Sig.(2-tailed)
Equal variances assumed	3.243	5.767	0.001

The result of Independent t-test indicates that the data was not equal because there is difference mean score between experimental class and control class. The result of independent t-test draws the conclusion that there is a significant difference between control class and experimental class, where the P-value is lower than standard $(0.001 < 0.05)$. Therefore, for hypothesis (c): H0 is rejected (μ 1 $\geq \mu$2).

5. DISCUSSION

In teaching and learning writing, not only students but also teacher should participate in making a good writing composition. So, in the present study, researcher provided metacognitive scaffolding strategy in teaching writing as the solution of the problem. In which, scaffolding refers to an effort to give assistance (e.g. giving cross questions) from the teacher when the students find difficulties in completing their task (Indahwati, et. al., 2013). Furthermore, Vygotsky argues that students need to interact with elder people and/or friends of the same age who have more knowledge than them in learning process (Yohanes, 2010). On the other hand, teacher needs to provide any kinds of assistance for their students, in terms of cognitive scaffolding.

As Anghileri proposes that there are three hierarchy levels of utilizing scaffolding in learning process, they are: (1) environmental provisions (classroom organization, artifact such as blocks); (2) explaining, reviewing and restructuring; and (3) developing conceptual thinking. Utilizing scaffolding in the present study refers to the second and third hierarchy levels which proposed by Anghileri. It is because the first level, environmental provisions are most suitable with elementary and kindergarten students in which at that time students play much more than in junior or senior high school. On the other hand, in the second level namely explaining, reviewing and restructuring, students are asked to understand a problem, do reflection, correct the answers and rearrange the possible correct answers. While, in the third level namely developing conceptual thinking, students

are asked to find other alternative solutions to solve the problems found then discuss the answers with their friends.

In conducting the research, researcher was focused on teaching writing. Researcher applied metacognitive scaffolding strategy. As Brown (in Lee and Baylor, 2006) defines that metacognition is an awareness of someone's cognition activity, a method which is uses to regulate someone's cognition process and a mastery of how to direct, plan, and monitor cognitive activity. Metacognition refers to a higher thinking level, involving the active control or metacognitive processes that are tangled with learning process. Livingston (1997) states that metacognition is related to awareness and monitoring of cognition system and also functioning cognition system. Fundamentally, metacognition refers to a higher thinking level, a process in which someone thinks about his thinking that involves the active control in planning, regulating and evaluating someone's thinking process. In which, in this case, researcher directed students to manage, plan, and monitor their writing activity. Therefore, in the present study, metacognitive scaffolding strategy was applied to see whether there is positive effect on students' writing achievement after being taught using metacognitive scaffolding strategy.

Actually, there are several studies either about scaffolding or metacognition skill. One of them entitled "The Implementation of Scaffolding in Improving Students Activeness in Writing", a research by Kasmaini (2010). The result shows that scaffolding can improve students' activeness in writing English on students at SMAN 15 Padang. The other study entitled "Hubungan antara kemampuan metakognisi dengan kemampuan menulis paragraf deskriptif siswa kelas X SMAN 2 Perbaungan tahun ajaran 2012/2013" by Al-Qibtia (2013). The result shows that there is a significant correlation between metacognition skill and students' writing ability. Based on those two studies, there is still a gap between the present study and those relevant studies. In the present study, researcher combined metacognition skill and scaffolding learning in teaching writing, especially teaching biography text. So, it became metacognitive scaffolding strategy. Moreover, researcher also used one of techniques of cooperative learning model namely STAD, in order to maximize the process of teaching writing using metacognitive scaffolding strategy. In addition, the present study aimed to reveal whether there is significant effect of metacognitive scaffolding strategy on students' writing achievement or not. Meanwhile, the above relevant studies only focused on one component either metacognition skill or scaffolding.

The findings of the present study are supported by two kinds of data namely quantitative and qualitative data. First, quantitative data are taken from pre- and post-test. The students' mean score of pre-test before giving treatment is 68.4, while the students' mean score in post-test is 81.4 with the gain score is 13. In compare with the data on control class, the students' mean score in pre-test before giving treatment is 67.0, while the students' mean score in post-test is 74.3 with the gain score is 7.3. Second, qualitative data are taken from the observation during the treatment.

With respect to theories, previous studies, and the result of gathered data in the present study, researcher proves that the hypothesis "there is a significant effect of utilizing metacognitive scaffolding on students' writing achievement" is accepted. It is proved by using Paired Sample t-test on both classes, in addition with Independent Sample t-test on gain scores of both classes. Although the result shows that there is also a significant difference on control class between pre and post-test, the result of experimental class is still higher than control class; statistically, there is a significant difference in terms of students' mean score before and after getting treatment. This result has similar results with Independent sample t-test, which indicates there is a difference between control class and experimental class. In addition, the Cohen's test was conducted to measure the effect size of utilizing metacognitive scaffolding strategy on experimental class. The result indicates that 58% of the change in gain score can be accounted for the Independent variable, where metacognitive scaffolding strategy as Independent Variable.

6. CONCLUSION

Derived from the result of data analysis, the researcher comes up with conclusion that there is significant effect of metacognitive scaffolding strategy on students' writing achievement. It is proved from the higher score on post-test than the pre-test on experimental class than control class. Based on the result of the hypothesis testing, it shows that there was significant difference in the gain scores from pre-test to post test in experimental class, compared with control class. The result of paired sample t-test both on experimental class and control class showed that both experimental class and control class have significant difference in terms of mean score in pre- and post-test. In addition, the Independent t-test was conducted as an addition with Paired t-test. As a conclusion, it can be inferred that students who taught under metacognitive scaffolding strategy showed better writing achievement than those who are not.

Moreover, it was found that all teaching and learning activities were conducted properly. In addition, activities in the lesson plan were also done properly by the researcher. Furthermore, in doing all writing stages, all indicators of metacognitive scaffolding strategy were fulfilled properly.

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