

# INCORPORATION OF METACOGNITIVE STRATEGIES IN TEACHING WRITING TO ENGINEERING STUDENTS

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## ABSTRACT

Effective English writing has long been a challenge in English language teaching. Metacognition has provided another perspective for ESL writing. Metacognitive strategies include skills in planning, monitoring and evaluating which develop learners to become independent and capable of directing their own learning process and thus become efficient learners. This pilot study investigates the problems encountered by engineering students in learning writing based on lecturers' perceptions. It also examines the effectiveness of using the selected metacognitive strategies in ESL writing. 70 participants were selected and categorized in two groups; control and experimental. Interviews were used to investigate the students' problems. Pre-test and post-test written essays were also used to examine the effectiveness of metacognitive strategies implemented to the students. The interviews were transcribed verbatim for analysis while the data obtained from pre-test and post-test was analyzed by using Statistical Package for Social Sciences (SPSS).

*Keywords: writing; writing problems; metacognitive strategies; engineering students.*

## INTRODUCTION

The learning of writing skills in universities is imperative especially for engineering students since it provides them with foundation skills in order to write effectively. In engineering field, writing is the most essential and common form of professional communication where "engineers have spent 20 to 40 percent of their working time writing memos, letters, e-mail, reports, and proposals" (McMurrey, 2002). This shows that mastering the writing skills is very crucial for the students who aimed to be successful engineers in future as any organization definitely expects them to write substantial technical reports, proposals and other documents that are clear and well organized.

However, it is not easy to become successful writers as there are many challenges faced by the engineering students. As cited in Mu (2005),

Angelova (1999) has illustrated, the factors affecting ESL writing are language proficiency, L1 writing competence, use of cohesive devices, metacognitive knowledge about the writing task, writing strategies and writers' personal characteristics. Among these factors, writing strategies seem particularly remarkable because many researchers (Arndt, 1987; Beare, 2000; Raimes, 1985; Victori, 1995; Zamel, 1982) claim that it is the writing strategies that primarily separate successful from less successful writers. Furthermore, according to Hsiao and Oxford (2002), strategies can "pave the way toward greater proficiency, learner autonomy, and self-regulation" (Hsiao & Oxford, 2002).

Many students do not use effective strategies when they write. The students might experience this especially when they were taught by novice teachers who possess insufficient training and simply teach in the way they were taught without reflecting upon whether their teaching is effective or not. Students did not even know the effective learning strategies exists, as they were not taught any strategy training, that is, on how to use the learning strategies (O'Malley & Chamot, 1989) in language activities particularly in writing tasks. For example, a study conducted by Sahandri & Saifuddin (2009) discovered that neither the instructors nor the students were aware of the use of metacognitive strategies in writing. Metacognitive strategies are believed to be one of effective strategies in writing as it enables us to be successful learners, and has been associated with intelligence (e.g., Borkowski, Carr, & Pressley, 1987; Sternberg, 1984, 1986).

According to Fenghua (2010), metacognitive strategy is a term used in information-processing theory to indicate an "executive" function and it refers to the strategy that is used by learners as the means to manage, monitor and evaluate their learning activities. To put it simply, metacognitive strategies are skills, approaches, and thinking and actions learners use to control their cognition and learning process. Researchers (Brown, 1983; O'Malley & Chamot 1990; Cohen, 1998) of FL /SL learning shared similar view with regard to definition and function of metacognitive strategies. They all emphasized that the essential nature and general function of metacognitive strategies is planning, organizing, and evaluating one's own learning (Wu Hongyun, 2004). A study conducted by Ya-Ling Wu (2007) on the use of language learning strategies (LLS) by students of different proficiency concluded that higher proficiency EFL students use LLS more often than lower proficiency students. Research by Hamzah & Abdullah (2009) also came to the same conclusion and found that more successful learners use more metacognitive strategies than less successful ones.

The research on strategies in language learning has left room for further research. Many previous researches regarding student writing have been conducted on writing in general (McLeod, 1987; Gungle & Taylor, 1989; Rankin-Brown, 2006) and few have focused specifically on academic writing especially on ESL tertiary students. Thus, this pilot study is conducted to gain insights from the difficulties in writing faced by engineering students and to find any significant effects when implementing metacognitive strategies in writing among engineering students. Therefore, three objectives are designed

as aim of this study and two research questions are formulated. They are as follows:

## **RESEARCH OBJECTIVES**

1. to investigate the problems encountered by engineering students in learning writing based on the lecturers' perceptions.
2. to examine the effectiveness of using metacognitive strategies in writing by comparing the performance of control and experimental group of this study.
3. to examine the effectiveness of using metacognitive strategies in writing by comparing the performance in pre-test and post-test of the experimental group.

## **RESEARCH QUESTIONS**

1. What are the lecturers' perceptions towards the problems encountered by the engineering students in learning writing?
2. To what extent do metacognitive strategies give effects in learning writing among the students?

## **METHODOLOGY**

### **Research Design**

This research study utilized a mixed methods design with the initial qualitative phase of study followed by a quantitative phase. Participants of qualitative method were three lecturers currently teaching Technical Writing for engineering students in a targeted university. The participants were volunteered to be interviewed for the study. All lecturers had teaching experience of at least six years and had been teaching the writing course for more than five years. Interview sessions were conducted separately (not in group) and all participants responded to all the questions successfully.

The participants of quantitative method were 70 ESL engineering students enrolled in English classes that focusing on technical writing. The participants were all from a technical university located in southern Malaysia. They were divided into two; experimental and control group. One class of 35 students with 25 males and 10 females represented as experimental group while another class of 35 students with 27 males and 8 females served as control group. Their English proficiencies were between Band 2 and 3 according to Malaysian University English Test (MUET). The experimental group (EG) received metacognitive strategy writing instruction (process approach) whereas the control group (CG) received the routine writing instruction (product approach).

### **Sampling**

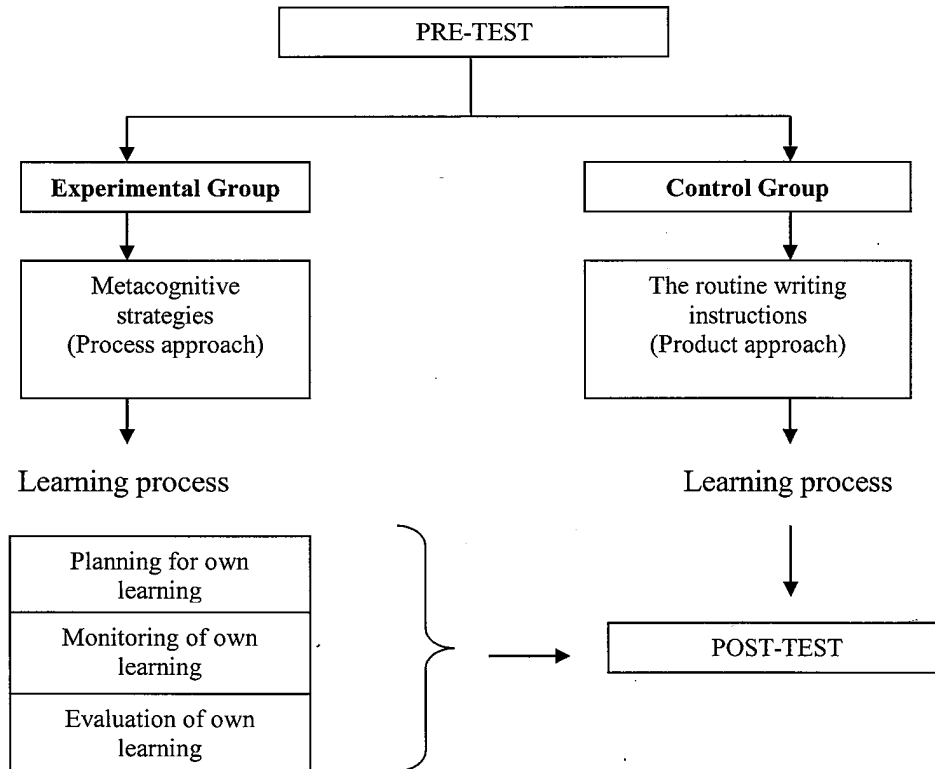
The study made use of a convenience sampling which was one of non-probability sampling techniques. It was a statistical method of drawing

representative data by selecting people because of the ease of their volunteering or selecting units as they were available or an easy access to the researcher. However, it should be noted that the sample might not represent the population as a whole.

### Data Collection Method

In this study, several instruments were used which included interview questions posed to writing lecturers and writing tests for pre and post-test. The interview sessions were used as needs-analysis to discover the writing problems faced by the learners while the marks obtained from the tests and the writing scripts were used to analyze the performance of the students.

The interview questions were open-ended in order to get the lecturers' perceptions towards the issue. There were 13 questions and based on their experience, they were asked to describe the writing problems faced by the students, their needs, attitudes and other factors that might affect the teaching and learning writing. All the interviews took between 20 to 25 minutes for a session. Other instruments used in this study were the pre-and post-tests. The tests were used to measure the performance of the students before and after the implementation of metacognitive strategies. The process of this particular procedure can be referred to the following diagram:



**Diagram 1:** Procedure of implementing metacognitive strategies in writing

### The pre-test

A pre-test was carried out to both groups before the experiment to confirm that the writing abilities of these two classes were at the same level. The

participants were not informed of the purpose of the experiment so as to confirm that the writing abilities of these two classes were at the same level. The pre-test was an in-class writing test in which students were given respectively 40 minutes to write a report within 250 words based on the information given in the rubric. Then, implementation of metacognitive strategies was done to find any significant effect of the treatment. The implementation was given only to the experimental group. The details are as follows:

### *The Implementation of Metacognitive Strategies*

This current study used Chamot's model which designed in 1990. It was called Cognitive Academic Language Learning Approach (CALLA). This model was used by many researchers as language learning strategies. (Xiao, 2007; Coskun, 2010; Fenghua 2010; Marimuthu, 2011). O'Malley and Chamot (1990) emphasized that the important role metacognition plays in academic learning and they recommended direct instruction as an effective classroom practice that would help students to develop their metacognitive awareness; the CALLA model. The following is the key features of the use of CALLA model adapted from Fenghua (2010).

**Preparation;** In the phase of preparation, the researcher first helped students to identify what they knew about the contents and strategies, what gaps in prior knowledge should be addressed. Elaboration, advance organization and selective attention were most commonly taught and practiced in this stage. Then the researcher offered metacognitive writing strategies to students and explained the importance of it and helped students to set positive, practical, feasible goals.

**Presentation;** In this phase, the metacognitive strategies in writing were presented and explained to students. The researcher first handed out a list of the metacognitive strategies in writing including self-planning, self-monitoring and self-evaluation. Then, the characteristics, usefulness, and applications of the strategies were explicitly explained through examples. The key point was that the researcher should make sure that students comprehend the new strategies so that they could practice the strategies meaningfully in the next phase. Therefore, the teacher should explicitly explain how, when and where to apply these strategies in writing which help facilitate strategy transferring. The author applied metacognitive strategy training into writing skills and encouraged students to employ the writing skills to their own writings.

**Practice;** Students were offered opportunity of practicing new strategies with authentic writing activities in this stage. They were required to recall writing strategies including cognitive and metacognitive that were presented in the presentation stage; then students began to plan their writings according to self-planning strategy. Self-planning included the following writing activities: students examined and identified the topic, considered readers, gathered information, brainstormed, made an outline and discussed the writing. During writing process, students were encouraged to employ self-monitoring strategy which helped students to assess their ongoing writing and take some sort of

remedial action when they encountered some difficulties. In order to help students to assess and revise their writings during the process and avoid writing blindly and randomly, a checklist was given as guideline.

**Evaluation;** In this phase, students were asked to check the level of their writings so that they could well understand what they had learned about new strategies, skills and what needed to be reviewed. Self-evaluation activities included self-questioning and debriefing discussions after strategies practice.

**Expansion;** This phase provides the subjects with opportunities to exercise higher order thinking skill (Chamot and O'Malley, 1990). In this phase, students were inspired to apply the targeted strategies. This phase aimed to help students to practice, consolidate, evaluate, automate and internalize the strategies that they just learned which mainly include self-planning, self-monitoring and self-evaluation.

The implementation of metacognitive strategies was carried out for 6 weeks to the experimental group. On the 7<sup>th</sup> week the targeted students were required to apply their knowledge of the strategies in a post-test.

The researcher employed a post-test to evaluate the participants' performance in writing and to find any significant effects from the treatment given to the experimental group. As conducted in pre-test, the post-test was an in-class writing test in which students were given respectively 40 minutes to write a report within 250 words. Different rubric was used but it contained the same difficulty level as it changed only the figures of statistics and the situation of the topic.

## **DATA ANALYSIS METHOD**

The next stage established the relationships between the labels identified in the initial stage by examining them for similarities and differences. The labels were then classified into several themes.

In this study, comparison was done on the performance in pre-test and post-test of both experimental and control groups. The scores of the writings were calculated to find the mean scores. The results were then analysed by using t-test application in SPSS (Statistical Package for the Social Sciences) to find the mean score, standard deviation, t-value and p-value. The researcher used *Independent-sample t-test* as the comparison was made based on the results of groups that were independent of each other for example comparing the experimental group and control group.

## **RESULTS**

### **Problems in learning writing among engineering students**

It was found that the difficulties reported by the lecturers fall into four themes namely; low English proficiency, lack of matured ideas, committing plagiarism and lack of motivation in learning writing.

Most of the students had low proficiency in English language as they obtained only Band 2 and 3 in MUET. Due to this, lecturers faced many challenges in teaching them as they lack of proficiency which contributed to problems in constructing good sentence structures and grammar. According to *Interviewee 1 and 3*, the students were able to express and discuss their ideas better in their first language (L1). However, it was difficult for them to do that in English.

[*Interviewee 1*: “They had difficulties in grammar and vocabulary which affect the construction of sentences in their writing. For example, the use of Subject-Verb-Agreement was highly influenced by their L1 where they tend to translate directly word-by-word thus affected the meaning of the sentences.” *Interviewee 3*: “Many of my students were able to brainstorm ideas or main points. However, they had problems in expanding the ideas by constructing good sentences. There were many errors in their first, second even the final draft of their writings. The use of vocab was also limited.]

Besides that, lecturers found that the students faced problems in writing as they lack of matured ideas. It was difficult for them to express their ideas and they took quite a long time to complete it. Many of the ideas were also immature, did not show critical thinking and were not creatively written.

[*Interviewee 1*: “When I asked them to do writing exercises in the class, they never finished them, normally they would ask to submit next week even though the task was very simple. The reasons were they didn’t have ideas and need more time.” *Interviewee 2*: “They often get stuck while writing, were unable to write critically, and showed poor attitude towards writing.” *Interviewee 3*: “They can write better if I gave them more time, but if I asked them to write and submit on the same day, they would give poor quality of work.”]

As students faced difficulties in giving good ideas and constructing good sentences, they resort to commit plagiarism. As mentioned by [*Interviewee 1*; “I found them have the information in the Internet and tend to copy and paste and try to suit to their topic.” *Interviewee 2*: “Many weak students used translation software when they write. The most common software used by them was Google Translate.” *Interviewee 3*: “They didn’t know how to paraphrase the sentences. All they did was just copy and paste from the Internet.”] This showed that students had lack of efforts to produce their own writings and neglecting the paraphrasing skills taught to them in the course.

Next, another challenge in learning writing among them was their lack of motivation. The weak students were aware of their condition but not all of them had the efforts to improve themselves. Some of them were reluctant as they were shy, embarrassed and lack of confidence to discuss their problems with their lecturers or friends. [*Interviewee 2*: It was quite rare for my students to do extra work on their own especially on writing. They felt there was no need to write if the teacher would not check the writing and they were also not sure whether they wrote correctly or not, so they tend to just focus on their assignments or final.” *Interviewee 3*: They had problems with their attitudes as they did not take proactive

actions to solve their writing problems. They liked to wait for the lecturers to tell what to do, what to write, how to write and so on. Some of them were very passive and shy and let the group leader to explain their problems to the lecturer.”]

**Effects of metacognitive strategies in writing**

In order to examine the effectiveness of metacognitive strategies in writing among engineering students, the researcher analyzed the scores for both the following instruments in the quantitative analysis.

**The hypothesis**

Based on Research Question 2, a null hypothesis was formed and the results of the findings could be referred in the following table.

Ho: There is no improvement in the students’ writing performance when they use metacognitive strategy.

**Table 1:** Results of pre-test and post-test scores

| Paired Samples Statistics |         |         |    |                |                 |
|---------------------------|---------|---------|----|----------------|-----------------|
|                           |         | Mean    | N  | Std. Deviation | Std. Error Mean |
| Pair 1                    | EG_PRE  | 48.8571 | 35 | 8.30359        | 1.40356         |
|                           | CG_PRE  | 49.1714 | 35 | 10.68117       | 1.80545         |
| Pair 2                    | EG_POST | 62.2000 | 35 | 7.45891        | 1.26079         |
|                           | CG_POST | 53.2571 | 35 | 7.03078        | 1.18842         |
| Pair 3                    | EG_PRE  | 48.8571 | 35 | 8.30359        | 1.40356         |
|                           | EG_POST | 62.2000 | 35 | 7.45891        | 1.26079         |
| Pair 4                    | CG_PRE  | 49.1714 | 35 | 10.68117       | 1.80545         |
|                           | CG_POST | 53.2571 | 35 | 7.03078        | 1.18842         |



**Table 2:** Summary of the pre-test and post-test results

|        |                   | Paired Differences |                |                 |   | t        | df     | Sig. (2-tailed) |       |
|--------|-------------------|--------------------|----------------|-----------------|---|----------|--------|-----------------|-------|
|        |                   | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |          |        |                 |       |
|        |                   |                    |                |                 | Lower                                     |          |        |                 | Upper |
| Pair 1 | EG_PRE - CG_PRE   | -.31429            | 13.45312       | 2.27399         | -4.93560                                  | 4.30702  | -.138  | 34              | .891  |
| Pair 2 | EG_POST - CG_POST | 8.94286            | 8.86813        | 1.49899         | 5.89655                                   | 11.98917 | 5.966  | 34              | .000  |
| Pair 3 | EG_PRE - EG_POST  | 13.34286           | 6.94069        | 1.17319         | 15.72707                                  | 10.95865 | 11.373 | 34              | .000  |
| Pair 4 | CG_PRE - CG_POST  | -4.08571           | 9.94210        | 1.68052         | -7.50095                                  | -.67048  | -2.431 | 34              | .020  |

### The pre-test

The analysis was done by using SPSS version 20.0. The researcher adopted t-test application to measure the pre-test writing performance between CG (Control Group) and EG (Experimental Group). *Pair 1* in the table shows the results of pre-test for both groups. It can be seen that there is no significant effect in pre-test writing performance between CG and EG ( $t = -.138$ ,  $p = .891 > .05$ ). As there is no significant difference, it fails to reject H null. The mean score of EG (48.8571) is a bit lower compared to CG (49.1714). This can be concluded that the classification of experimental and control group is reasonable and effective. It also confirmed that the writing abilities of these two classes were at the same level.

### The post-test

A post-test was carried out in 7<sup>th</sup> week to measure the performance of both groups however, only EG was treated with metacognitive strategy while CG learned writing by using the normal approach in the class. The results can be referred in the table (*Pair 2*) where it can be seen that metacognitive strategy which implemented to EG has shown a significant effect ( $T = 5.966$ ,  $p = .000 < .05$ ). As it shows significant difference, it rejects the H null. The mean score of EG (62.2000) in this post-test is higher than CG (53.2571). This result indicates that the treatment really has positive effects on students' writing performance.

### **Comparison of pre-test and post-test**

Another comparison was made to measure the performance of both groups between their pre-test and post-test. It can be said that both groups show improvement 6 weeks after the pre-test, however, EG shows better performance compared to CG. It can be referred in *Pair 3* where the results show significant difference between the pre-test and post-test ( $T= 11.373$ ,  $p= .000 < 0.5$ ). The mean score of the post-test (62.2000) is higher than the pre-test (48.8571). Besides that, *Pair 4* in the table shows there is significant difference between pre-test and post-test of CG ( $T= -2.431$ ,  $p= .020$ ). However, the mean score of the post-test of CG is lower compared to EG. This evidence concludes that the implementation of metacognitive strategy helps students in EG to perform better in their writing compared to normal approach used by CG.

## **DISCUSSION**

### **Problems encountered by engineering students in writing**

It was very crucial to understand the problems encountered by the students in order to help them to improve their writing. It was generally recognized that many second language learners have difficulties with academic writing in English (Mohan & Lo, 1985). Some of the students' writing problems found in this study were same as mentioned by Mohan & Lo (1985) where their difficulties were sentence-level problems with grammar and vocabulary. One of the reasons they have this difficulty was due to their lack of proficiency in the second language. Raimes (1985) has suggested that "the notion of skill in L2 writing might be best captured as a combination of variables, in each of which writers could be judged as more or less skilled and one of them is language proficiency." Thus, in order for the students to become good writers, they need to possess good second language proficiency.

This could be done by practising the language more frequently in writing as in order to perform well, they had to focus on the sentence structure, grammar and vocabulary. Lecturers and students might incorporate grammar skills in writing as teaching or learning grammar in isolation did not impact grammatical accuracy in writing (Omaggio, 2003). However, according to the findings of the interview, many students did not practise writing regularly. This explained why they encountered basic (English) language problems in their writing. It was important for them to practise writing as Omaggio (2003) mentioned that sentence-combining practice, if regular, could improve composition skills. Here, the students need to have strategies to practise writing more regularly.

Besides that, another problem faced by the students was they have limited ideas in expressing their opinions in writing. The students seemed that they do not know what to do when they could not think of ideas which made some of them simply decided to plagiarize some other people's works from the Internet. However, it was found that the students were able to give ideas and opinions much better by using their L1 rather than L2. This could be explained

as writing in an L2 might be more complex than in an L1 due to psycholinguistic complications (Kroll, 1990). Hence, we should not assume that proficient L1 writers will be successful in the L2 automatically (Omaggio, 2003). The students needed different approaches and strategies to write second language compositions.

In spite of dealing with the students' problems in writing, lecturers also had to face their lack of motivation in learning writing. The students seemed to have lack of confidence, felt shy or embarrassed and even ignorant to discuss their problem in writing with their lecturers. However, there were some of them who were aware of their conditions and tried to seek for advice and guidance from the lecturers. This showed that the students had different attitudes even though they had generally same proficiency level (Band 2 and 3 in MUET). It is believed that good language learners have similar pattern in developing their ability, which differentiate them from bad language learners (Nunan, 1999). Rubin & Thompson (1982) had come to the 14 characteristics of good language learners. The characteristics used by learners are influenced by several factors such as motivation, language learning environment and learning strategies (Oxford, 2004).

A research by Setiyadi (2001) suggested that most good learners preferred to use metacognitive strategies in learning a second language. Another research conducted by Bremner (1999) also suggested that most good language learners in China preferred to use metacognitive strategies in their learning process. So, to help these students become good language learners, especially in learning writing, this study implemented the metacognitive strategies in writing to find if there was significant effect in their performance.

By applying metacognitive strategies in their writing, they were expected to perform better and able to direct their own learning. It would also benefit the students as they would think about how the way they could learn best and become aware of their capabilities, strength and weaknesses (Darling-Hammond et.al, 2003).

### **The effects of metacognitive strategies in writing**

Based on the t-test analysis, the results showed pre-test for both control group (CG) and experimental group (EG) had no difference. It meant that both groups were at the same level before they received any treatment for their writing. The results were also showed that the mean score of EG was a little lower than CG. Thus, it could be assumed that the classification of CG and EG was reasonable and effective (Fenghua, 2010) as both groups obtained the same level of proficiency (Band 2 and 3 in MUET).

However, there was a significant difference ( $T=5.966$ ,  $p=.000<.05$ ) between the achievement post-test scores of EG and CG after the implementation of metacognitive strategies in writing. It showed that the mean score of EG (62.2000) was higher than CG (53.2571). The results indicated that metacognitive strategies played an important role and gave positive effects in helping the students of EG to perform better compared to CG. It was also

parallel with the results in other studies (Fenghua, 2010; Rogers, 2010; Sahandri & Saifuddin, 2009).

Besides that, comparison between the pre-test and post-test of EG showed another significant difference as the mean score of the post-test (62.2000) was higher than the pre-test (48.8571). Although the pre-test and post-test results of CG also showed significant difference, the mean score of CG in the post-test was lower compared to EG. This strengthened the evidence that EG had performed better in the post-test as they received metacognitive strategies.

Based on the results, it was impossible to deny that metacognitive strategies did not give positive effects in students' writing performance. It could be seen that by applying the strategies, students were able to adapt to new knowledge and apply it in their writing. This skill was related to one of the attributes of good learners listed by Rubin (1975); "they try out new knowledge."

As the students applied these new strategies, they changed their learning styles as well. They might find out that there were other strategies which more appropriate to be used in writing. For example, they did not perform well with the strategies they normally used (as seen in the pre-test) until they tried out the newly introduced strategies. This had given some insights on how they could perform better in writing in different contexts as Kuhn and Dean (2004) explained that metacognition enables students who have been taught a particular strategy to retrieve and deploy it in new context.

The use of metacognitive strategies had also increased the students' motivation to write as it was clearly seen that they participated actively in the learning process despite they lack of proficiency. This was due to metacognition affects motivation because it affects attribution and self-efficacy (Pierce, 2003).

Brophy (1986) also stated that "student motivation to learn was construed as a student tendency to find academic activities meaningful and worthwhile, and to try and get the intended academic benefits from them." The students paid attention and participated in the activities when metacognitive strategies were taught by the lecturer explicitly to the students as the results showed that there was improvement in their writing after the treatment was given.

Using metacognitive strategies in writing helped the students to become independent learners as metacognitive skills include taking conscious control of learning, planning and selecting strategies, monitoring the progress of learning, correcting errors, analyzing the effectiveness of learning strategies, and changing learning behaviors and strategies when necessary (Clayton, 2009; Dunlosky & Metcalfe, 2008; Ridley, Schutz, Glanz, & Weinstein, 1992). It was easier for the lecturers to teach students with positive attitude and behavior.

In conclusion, from this pilot study, it was learned that there were significant effects in using metacognitive strategies in writing. The results only showed to what extent the targeted strategies affect the students' writing performance. It

could also be seen that there were many difficulties encountered by engineering students in learning writing namely low proficiency in English, lack of ideas, committing plagiarism and lack of motivation. While based on the experiment conducted, it was proven in the pre-test that the strategies which they normally used gave less positive effects as the pre-test marks were lower compared to after metacognitive strategies were applied. The implementation of metacognitive strategies had given positive effects as the post-test for the experimental and control groups showed significant difference in the t-test analysis. There was also significant effect in the performance of pre-test and post-test of the experimental group.

This research could further be extended to focus on the impact on overall second language proficiency and use qualitative approach to measure the performance of the students specifically to the aspects of language that need to be improved. Besides that, the training could also be carried out in other different skills (listening, speaking and reading) so that the influence of metacognitive strategies could be seen in different views. The study also managed to conduct only one post-test for the experiment. Therefore, future researcher might want to conduct two post-tests to see the progress of the students' writing performance as well as to confirm the results after the treatment has been implemented to them.

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