The effects of knowledge and regulation of cognition on the students' writing skills in a metacognitive process-oriented writing instruction

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Abstract

This current study investigated the correlation between the students' writing skills and each variable of metacognitive parameters, i.e. knowledge about cognition and regulation of cognition. We also examined the power of the correlation and its direction. We distributed Metacognitive Awareness Inventory for a comprehensive evaluation of the students' metacognitive awareness, and a writing rubric to assess the students' academic writing skills. Quantitative analysis by using Pearson Correlation test and Multiple Regression test were employed to check the correlation, and its strength and direction, respectively. The results demonstrated that there was a significant and unidirectional correlation between metacognition and writing skills. Furthermore, it was noted that knowledge about cognition and regulation of cognition together affect the English writing skills with an influence level of up to 41.7%, and each variable of the two parameters gave a great influence on the English writing skills up to 82, 2%. These findings indicated that a student with good metacognitive skills will have good self-regulated learning skills, which enable him to establish reasonable writing goals, plan and strategies, which as a consequence, will improve his writing skills. Pedagogical implication lies in the better understanding of metacognition that will help writing teachers to be supportive and encourage them to develop lesson plans which accommodate this notion.

Keywords: writing instruction; metacognition; knowledge about cognition; regulation of cognition; process writing

1. Introduction

Writing and thinking are two recursive interrelated matters that affect one another. By writing someone is practicing the ability to think because to deliver an easy-to-understand message that is clear, coherent, and neat, someone must be able to transform abstract ideas in the mind into concrete concepts that can be explicitly clarified. For this relation, many studies revealed that writing helps students to think (Etemadzadeh et al., 2013; Naber & Wyatt, 2014; Nejmaoui, 2019; Stephenson & Sadler-McKnight, 2016) and that the natural process of writing contributes to students learning (Al-Rawahi & Al-Balushi, 2015; Gillespie et al., 2014; Pelger & Nilsson, 2016; Ray et al., 2016).

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The process of writing itself is not instantaneous. There are several stages so that a person can produce a quality writing (Oshima & Hogue, 1994). They are pre-writing, which includes choosing and narrowing down the topic, planning or outlining, writing and revising drafts, editing, and writing the final product and publishing. To achieve prominent results, these steps should be passed through with awareness and engaging the thinking process. This thinking awareness is popular as metacognition. Shub (1998) confirmed that assisting the students to conciously manage their writing process is teaching them metacognition. He further explained that stimulating the students' conscious control of their writing processes will enable them to improve their writing skills. Previous studies also found that metacognitively aware students perform better and strategic than unaware students because metacognitive awareness allows them to plan and manage their learning, including in writing (Eluemuno & Azuka-Obieke, 2013; Mansor et al., 2018; Negretti, 2012; Sumarno, 2020; Teng, 2016).

Furthermore, based on observations made by the writers in several writing classes, it was noted that many students still did not consciously carry out each stage of the writing process even though they have received material about process writing steps. This is because they were still confused and were used to write casually. Therefore, in the present study, the writers tried to stimulate students' awareness when writing to involve the cognitive processes at every stage of writing. This stimulation was done by implementing the metacognitive writing instruction. During the lesson, the students got a writing prompt containing several questions to make them aware of what they were thinking of and doing at each writing step. Then, a Metacognitive Awareness Inventory (or MAI which was adapted from Schraw & Dennison, 1994) was distributed before the lesson ended to see their metacognitive awareness after experiencing metacognitive learning in process writing. This MAI contains some parameters as indicators of students' cognitive processes. Finally, this study mainly intends to see the correlation of the students' writing quality which representing the students' writing skills to each metacognition parameter. The correlation analysis which was carried out not only measured whether there was a correlation or not but also the strength of the correlation and its direction.

2. Theoretical Review

2.1. Academic writing and process-oriented writing

Writing is the process of organizing and communicating ideas and thoughts into written forms with written symbols as the representation of a language. There are many kinds of writing, and one of them is academic writing. Academic writing refers to the type of writing demanded at the university level. This type of writing differs from the other types of writing, such as literary writing, journalism, or business writing, for three main reasons. The first is the audience or readers. In academic writing, the writer must be aware that those who will read their writings are the lecturers or the other students. Therefore, he has to pay attention to the second and third reasons, namely the tone of writing and the purpose of writing. The tone of writing is the style or manner of expression which is stated in the choice of vocabulary, language style, and grammar structure, even in the sentence length. The tone of writing can be serious, amusing, personal, etc. For academic writing, the tone is usually formal and serious. Hence, the writer should be careful to use the vocabulary or language style that is serious and formal. Then, as for writing, in terms of organizational form and style, academic writing can be in the form of a persuasive essay if it aims to persuade or an argumentative essay if it is written to share arguments.

Composing an academic writing is not simple because it requires knowledge and lots of practice. One thing that must be understood is that writing is a process, not a product. This means that writing, either in the form of an article or a report, will never be perfect. When the writer reads it again, there must be a possibility to review it again and revise it again, again and again.

There are four steps of the writing process, namely prewriting, planning or outlining, writing and revising the draft, and writing the final copy to publish or submit (Oshima & Hogue, 1994). In the pre-writing stage, two activities must be done. They are selecting and narrowing down the topic using an inverted pyramid diagram and then generating the topic using the brainstorming process. The brainstorming process itself can be done by listing techniques, freewriting, or clustering. The listing technique is thinking about the selected topic and then in a short time writing down any words or phrases that come to mind about that topic in the form of a list. The purpose of this listing activity is to generate as many ideas as possible and then choose one specific topic to be written about. Freewriting also has the same goal as listing, which is to enrich ideas and then select a specific one, but it is done by writing freely without paying attention to the rules of writing. The more freewriting, the more ideas will emerge. Then, clustering can be done by making sub-topic balloons between the selected topic that is written in the middle. All of the above activities are the pre-writing stage, with the main goals of determining topics and enriching ideas about the topics to be written.

Next, after pre-writing is finished, the writer will arrive at the planning or outlining stage. At this stage, the writer organizes the ideas that have been generated in the pre-writing stage in the form of an outline. When the outline is formed, the writer can proceed to the next stage, namely writing and revising the draft. Revision can be done by looking at the content, organization, grammar, and also the choice of words used in the writing. While proofreading can be done by asking other people to check grammar, spelling, or punctuation. After that, final writing is done to produce a final written product.

The steps of process writing explained above were applied in this research. Studies indicated that process-oriented writing is better facilitates the students' writing skills than product-oriented writing (Alnufaie & Grenfell, 2012; Kadmiry, 2021; Özenç, 2016; Schreiber et al., 2016; Sumarno, 2019) and that metacognitive and writing are mutually interrelated and give positive impact to one another (Balta, 2018; Kaya & Ateş, 2016; Mansor et al., 2018; Negretti, 2012; Sumarno, 2020; Wang & Han, 2017). However, very few of them have investigated the relationship between process writing and metacognition subprocesses, the strength of the correlation, and its direction as investigated in this research, although some studies have investigated the correlation of metacognitive elements and writing (Sumarno, 2020; Teng, 2020; Wang & Han, 2017; Yanyan, 2010; Yarrow & Topping, 2001).

2.2. Metacognition in language learning – subprocess of metacognition

Metacognition is widely defined and no single definition can be taken as a fixed explanation. Yet, metacognition in this study refers to the awareness and reflections about one's knowledge, experiences, and emotions (Haukås et al., 2018). As researchers are increasingly emphasizing the importance of metacognition to enhance teaching and learning, many studies are conducted to deeply investigate how it works and helps. Tarricone (2011) states that metacognition is the basis for learning. Students who receive metacognitive instruction can develop skills that will make them more successful in their academic and professional careers. This is because the more capable a student understand how he learns and optimally processes the information, the more information will be processed so that he would have a more complex memory. This ability is then considered an indicator of academic success.

Metacognition skills will enable students to create a situation that encourages learning. When they are about to start doing something to achieve a certain goal, they will know what conditions and strategies will work best for them. It happens because they can reflect on their learning habit and thinking that allows them to better understand their learning process. For instance, a person may learn better in a quiet room or at a place with music, individually or in a small group discussion, by creating

a detail-strict study schedule or just learn with the flow, etc. These skills will make them study or work more efficiently and successfully.

Metacognition has been itemized into two primary components, i.e. knowledge about cognition and regulation of cognition (Flavell, 1979; Brown, 1987; Schraw & Dennison, 1994). Knowledge about cognition consisted of three variables that serve the reflection section of metacognition. It corresponds to what students know about themselves, strategies, and conditions that are most useful to them. They are declarative knowledge or information about themselves as learners, procedural knowledge or information about how to do something, and conditional knowledge or knowledge about when to use a procedure or strategies and why.

With declarative knowledge, the students can reflect on their skills, intellectual characteristics, and abilities as learners. For instance, they know their intellectual strengths and weaknesses, information which is important and not important, teacher's expectation, and can control over their learning. Procedural knowledge will enable students to decide strategies to complete the tasks. In another word, the students aware of the strategies they use when study and know that it usually works best than any other strategies. Finally, with conditional knowledge, the students can consciously understand when to use a particular learning strategy in a certain condition and when not to.

Meanwhile, regulation of cognition consists of five parts: planning, comprehension monitoring, information management strategies, evaluation, and debugging strategies. The planning subprocess facilitates students to reflect on the goal setting and plan arrangement before learning. Information management strategies will make the students organize, elaborate, select, and proceed with information more efficiently. For example, they know when to slow down when finding important information or drawing diagram to make themselves more understand about a topic. Comprehension monitoring means the students assess their learning or strategy use, such as pausing regularly to check their comprehension. Debugging strategies are strategies to fix comprehension and performance mistakes by asking for help when they think they do not understand or stop and reread when they get confused. While the evaluation process includes the analysis of effectiveness of the strategies used after a learning process, for example by asking themselves if there was an easier way to do things after finishing a task.

Considering the prominent role of metacognition in students' learning (Eluemuno A. & Azuka-Obieke, 2013; Mansor et al., 2018), this study tried to see this relation by using a Metacognitive Awareness Inventory developed by (Schraw & Dennison, 1994). This MAI assessed the students' metacognitive awareness in each subprocess has been explained above and consists of 52 True-False questions. MAI were used worldwidely and was noted reliable although it has been revised currently to be more user-friendly.

2.3. Metacognitive process-writing instruction using prompt

Metacognitive strategies refer to methods which are used to help students to understand and aware of the way they learn so that they will be more consciously strategic toward their process and goals and finally achieve higher results. Metacognitive writing instruction will facilitate students to understand their writing processes and adapt their processes to the given task (Stewart et al., 2015). By reflection, which is a part of metacognitive processes, the students will be able to choose what tools and strategies that fit with them and usually work best when they are finishing a project. Lavelle & Bushrow (2007) found that to reach their objectives, writers commonly rely on a certain pattern or strategies. These strategies are essentially metacognitive. Therefore, making the students conscious of their process of writing would be beneficial for them when they learn to write well. Besides,

understanding the students' way of thinking during the process of writing will help the teachers as well to better guiding the students and hopefully will improve the students' writing performance.

Many experts have designed how metacognitive can be inserted during teaching and learning activities. Some of them recommended modeling through explicit instruction, such as think-aloud or "I learned" statements, making diagrams, weekly review, checklist, or mnemonics (Ellis et al., 2014). Papleontiou-louca (2003) had also listed activities that can develop metacognition in practice which including consciousness and introspection, namely debriefing the thinking process, keeping a thinking journal, and thinking aloud.

This current study tried to implement the organizational tools, specifically in the form of written prompts to insert metacognition in the process of writing lessons. The prompt contained some reflective questions in each writing step and was designed to stimulate students' conscious thinking or metacognition during the process of writing.

3. Method

3.1. Participants

There were 22 English Study Program students of a private university in Lamongan Regency, Indonesia participated in this study. They were in the fourth semester and taking a course of Academic Writing. This course aims at enabling the students to produce a text of writing for academic purposes. Before taking this course, they took an Essay writing course in which they were given and practiced the material about Process-oriented Writing. Since they have learned about the steps of process writing in the previous semester, it was hoped that the students would follow these steps of writing in the Academic Writing course. However, the researcher found the opposite. Hence, by using Metacognitive writing instruction, the researcher tried to make and facilitate the students to be aware of their process of writing during their writing. It was done by giving the students a writing prompt in each writing step.

3.2. Instrument

Quantitative research was employed in this study. To collect the data, the students were asked to fill in a Metacognitive Awareness Inventory (MAI) after receiving metacognitive writing instruction and doing a writing test. The MAI contained Yes/No questions related to the knowledge and regulation of cognition. It was administered to see the students' metacognitive awareness when writing. While the writing test was given to measure the students' writing skills. They were asked to write academic writing by describing a chart in more or less 300 words.

3.3. Data collection and analysis

Data analysis was done by at first assessing the writing products of the students using a writing rubric, and then analyzing the writing scores in correlation with the MAI results with the Pearson Correlation. This statistical correlation analysis was done to see the correlation between the writing performance and each element of metacognitive skills, namely knowledge about cognition, which consists of procedural, declarative, and conditional, and regulation of cognition consisted of planning, comprehension monitoring, information and management strategies, debugging strategies, and evaluation. After that, the researcher discussed the overall findings that had been gotten.

The correlation analysis which was carried out not only measured whether there was a correlation or not but also the strength of the correlation and its direction. The criteria for the correlation relationship are as follows:

Correlation coefficient	Relationship
0.00 - 0.25	Weak
0.26 - 0.50	Sufficient
0.51 - 0.75	Strong
0.76 - 0.99	very strong
1.00	Perfect

Meanwhile, the criteria for the correlation direction can be seen from the sign on the correlation value obtained. If it is positive then the correlation is in the same direction, and if the correlation value is negative, the correlation is in the opposite direction.

In addition to correlation analysis, regression analysis was also carried out on these variables. Regression analysis aims to examine whether there was an influence between variables of metacognition parameters in knowledge about cognition and regulation of cognition on the English writing skills. This regression analysis was performed using multiple regression analysis.

4. Results

Table 1. Descriptive statistics of English writing and metacognition

	Mean	Max score	Std. deviation	Percentage
English writing	82,93	100	6,012	83
Knowledge about cognition	10,09	17	5,468	59
- Procedural	2,23	4	1,270	56
- Declarative	4,68	8	2,835	59
- Conditional	3,18	5	1,622	64
Regulation of cognition	19,91	35	11,522	57
- Planning	4,41	7	2,557	63
- Information management strategies	5,00	10	3,367	50
- Comprehension monitoring	3,45	7	2,721	49
- Debugging strategies	4,18	5	1,220	84
- Evaluation	3,05	6	2,380	51
Metacognition	30,00	52	16,830	58

Table 1 shows the test results of students' English writing ability, students' metacognition, and scores for each variable and parameter in metacognition. The average score of the students' writing ability test was 82.93 from the maximum score which was probably 100 or about 83%. While the mean score of students' metacognition is 30.00 from the maximum score which may be 52 or about

58%. Furthermore, the mean scores of the two metacognition parameters namely knowledge about cognition and regulation of cognition were 10.09 and 19.91, respectively, with possible maximum scores of 17 and 35 or about 59% and 57% of the maximum achievement.

Table 2. Correlations analysis between English writing skill and metacognition

		English writing	Knowledge about cognition	Regulation of cognition	Metacognition
English writing	Pearson Correlation	1	,635**	,641**	,645**
	Sig. (2-tailed)		,002	,001	,001
Knowledge about cognition	Pearson Correlation		1	,957**	,980**
	Sig. (2-tailed)			,000	,000
Regulation of cognition	Pearson Correlation			1	,996**
	Sig. (2-tailed)				,000
Metacognition	Pearson Correlation				1
	Sig. (2-tailed)				

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 showed that there was a significant correlation between the students' writing skills and the metacognitive skills. It was indicated from the significance value 0,001< 0.05 with the Pearson Correlation test. It can be seen in detail that the correlation between the writing skills with the knowledge about cognition and the regulation of cognition were significant with the significant values 0,635 and 0,641, respectively.

Table 3. Correlations analysis between English writing and knowledge about cognition

		English writing	Procedural	Declarative	Conditional	Knowledge about cognition
English writing	Pearson Correlation	1	,619**	,681**	,464*	,635**
	Sig. (2-tailed)		,002	,000	,030	,002
Procedural	Pearson Correlation		1	,868**	,788**	,916**
	Sig. (2-tailed)			,000	,000	,000
Declarative	Pearson Correlation			1	,883**	,982**
	Sig. (2-tailed)				,000	,000
Conditional	Pearson Correlation				1	,937**
	Sig. (2-tailed)					,000
Knowledge about cognition	Pearson Correlation					1
	Sig. (2-tailed)					

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 3 shows the results of the correlation analysis between the variables in the parameters of knowledge about cognition, namely procedural, declarative, and conditional knowledge. It can be noticed that a significant correlation emerged between all of the variables to the English writing skills.

The strongest correlation based on the Pearson Correlation test is the declarative knowledge (0.681) and then followed by the procedural (0.619), and the conditional knowledge (0.464).

Table 4. Correlations of English writing and regulation of cognition

		English writing	Planning	Information management strategies	Comprehension monitoring	Debugging strategies	Evaluation	Regulation of cognition
English writing	Pearson Correlation	1	,550**	,692**	,576**	,380	,715**	,641**
	Sig. (2-tailed)		,008	,000	,005	,081	,000	,001
Planning	Pearson Correlation		1	,868**	,855**	,677**	,897**	,934**
	Sig. (2-tailed)			,000	,000	,001	,000	,000
Information management strategies	Pearson Correlation			1	,967**	,672**	,951**	,978**
	Sig. (2-tailed)				,000	,001	,000	,000
Comprehension monitoring	Pearson Correlation				1	,619**	,916**	,963**
	Sig. (2-tailed)					,002	,000	,000
Debugging strategies	Pearson Correlation					1	,784**	,750**
	Sig. (2-tailed)						,000	,000
Evaluation	Pearson Correlation						1	,978**
	Sig. (2-tailed)							,000

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows the results of the correlation analysis between the variables in the regulation of cognition parameters and the English writing skills. Although the regulation of cognition parameter shows a significant correlation to the English writing skill, not all of the variables show a significant correlation to the English writing skill. The variables that show a significant correlation to English writing skills and their order are evaluation (0.715), information management strategies (0.692), comprehension monitoring (0.576), and planning (0.550). Meanwhile, the debugging strategies variable (0.380) shows an insignificant correlation to English Writing skills.

Table 5. Multiple regression analysis of knowledge and regulation of cognition for English writing skill

Parameter	Regression coefficient	β	T	Sig.
(Constant)	75,977		34,467	,000
Regulation of cognition	,274	,249	,413	,685
Knowledge about cognition	,210	,403	,666	,513
F = 6,783				,006
R Square = ,417				

Table 5 shows the results of multiple regression analysis between the parameters of knowledge about cognition and regulation of cognition on English writing skills. In the F test, a score of 6.783 was obtained with a significance value of 0.006 <0.05. This means that regulation of cognition and knowledge about cognition together affect the English writing skill. The magnitude of the influence of

these two parameters together is 0.417 or 41.7%. The regression equation formulas in this analysis are: $Y = 75.977 + 0.210X1 + 0.274 X2$; where Y is an English writing skill, X1 is knowledge about cognition, and X2 is regulation of cognition. If being analyzed partially, neither the parameters of regulation of cognition nor knowledge about cognition affect English writing skills which can be seen from the significance scores of 0.685 and 0.513, respectively, which are more than 0.05.

Table 6. Multiple regression analysis of each metacognition variable for English writing skill

Variable	Regression coefficient	β	t	Sig.
(Constant)	86,593		22,244	,000
Procedural	-,095	-,020	-,073	,943
Declarative	,599	,283	,628	,541
Conditional	-1,375	-,371	-1,309	,213
Planning	-,526	-,224	-,739	,473
Information management strategies	2,438	1,365	2,121	,054
Comprehension monitoring	-3,418	-1,547	-3,273	,006
Debugging strategies	-2,827	-,574	-2,608	,022
Evaluation	3,898	1,543	2,547	,024
F = 7,512				,001
R Square = ,822				

Table 6 shows the results of the regression analysis between the variables in the parameters of knowledge about cognition and regulation of cognition on the English writing skills. In the F test, a score of 7.512 was obtained with a significance value of 0.001 <0.05. This means that all of the variables together affect English writing skills. The influence of these eight variables together is 0.822 or 82.2%.

5. Discussion

This study investigated the relationship between the quality of students' writing which represents students' writing skills with each metacognition parameter. Metacognition parameters that were used as indicators of students' cognitive processes are knowledge about cognition and regulation of cognition. Our findings revealed that there was a significant and unidirectional correlation between metacognition and writing skills. Furthermore, this study also revealed a significant and unidirectional correlation between the parameters of metacognitive knowledge and regulation of cognition with the students' writing skills. These results are in harmony with the previous studies (Teng, 2016; Teng, 2020). Based on these results, metacognitive process-oriented writing instruction is recommended to improve the quality of students' writing and writing skills.

In the analysis of the first metacognition parameter, knowledge about cognition, there are three variables used, namely declarative, procedural, and conditional. From the results of the Pearson Correlation test, these three variables had a significant and unidirectional relationship with students' writing ability. The level of the relationship (correlation) strength showed that the declarative variable and procedural variables have a strong level of correlation with the student's writing ability, while the conditional variable has a sufficient level of correlation. The results of this test also showed that the

three variables in knowledge about cognition had a mutually significant correlation and were in the same direction with a very strong level of correlation.

Knowledge about cognition facilitates the students to do a reflection on their thinking process. This study found that among the three variables in the knowledge of cognition, declarative knowledge is the strongest factor that correlates with the student's writing skills, followed by procedural, and then conditional knowledge. It means that if the students can reflect on their intellectual characteristics, such as their learning habits' strengths and weaknesses, they will be able to control their learning and will work best. As a consequence, their achievement will be better. Then, with procedural knowledge, the students will be able to decide which strategies to use and how to use that strategy that usually works best for them, and then if followed by conditional knowledge, they will be able to see in what condition they can use certain strategies. These findings support the importance of self-regulation in writing (Teng & Huang, 2019), which noted that when writers are more self-regulated, for example, more reflective and organized during the writing process, they are more skilled in writing (Teng, 2016). Besides, these findings coincide with the study results of Farahian & Avarzamani (2018) which indicated that skillful writers benefit from higher metacognitive awareness. They noted that skilled writers are more familiar with the type of text and its organization, hence showed more awareness of writing tasks.

For the second metacognition parameter analysis, regulation of cognition, there were five variables applied. From the results of the Pearson Correlation test, these five variables had a unidirectional relationship with the students' writing ability. However, only four variables, the planning variables, information management strategies, comprehension monitoring, and evaluation had a significant relationship with the students' writing skills, while the debugging strategies variable did not have a significant relationship. The level of the relationship (correlation) strength showed that the variable planning, information management strategies, comprehension monitoring, and evaluation had a strong correlation with the student's writing skills, while the debugging strategies variable had a sufficient correlation level. The results of this test also showed that the five variables in the regulation of cognition have a mutually significant correlation and were in line with a very strong level of correlation, except for the correlation between debugging strategies and planning, information management strategies, comprehension monitoring which had a strong correlation level.

These results indicated that most of the students were already able to make plan arrangements before learning, organize, select and proceed with information efficiently, check their comprehension, and evaluate their learning process but were not accustomed to correct comprehension and performance mistakes. The reason can be because they did not know how to do that and were not aware that this strategy can help their learning if they did it correctly. However, the other variables which showing a significant and very strong correlation were by the previous results which noted that metacognitive regulation encompassing self-regulatory skills and made a significant contribution to writing performance (Teng, 2019).

Multiple regression analysis showed that knowledge about cognition and regulation of cognition together affect the English writing skills with an influence level of up to 41.7%. This means that these two parameters are important enough to support students' English writing skills. However, if the two parameters are not done together, it will not have a significant effect. That is to say, for a student who only uses knowledge about cognition without regulation of cognition, his English writing skill will not be optimal. Likewise, if a student only uses the regulation of cognition without any knowledge about cognition, his English writing skills will not be maximal, too. This is because students do not have a complete awareness from the beginning of writing which is marked by the presence of knowledge about cognition until the end of the writing process which is marked by the existence of the regulation of cognition.

When being analyzed more closely, each variable of the two parameters, consisting of procedural, declarative, conditional knowledge, comprehension monitoring, planning, information management strategies, debugging strategies, and evaluation, together have a great influence on the English writing skills up to 82, 2%. This means that if a student applies all stages of knowledge about cognition and regulation of cognition, it will have a very big influence on his success.

However, there is a striking difference in the effect of English writing skills if the parameters of knowledge about cognition and regulation of cognition were seen globally (41.7%) and when viewed in detail by each constituent variable if they were carried out together (82.2%). The most logical explanation of this finding is because of the stark difference in the number of items between the two, where knowledge about cognition with 17 items (maximum possible score 17) and regulation of cognition with 35 items (maximum possible score 35). If the distribution of a person's metacognition stages is uneven or tends to carry out certain cognitive processes, it will not affect English writing skills. For example, someone who does a lot of cognitive processes only in the regulation of cognition without doing cognitive processes in knowledge about cognition will still be able to obtain a high metacognition score, but it does not represent all participants. This will cause the metacognition process to be suboptimal because it only occurs during the writing process. This result implies that the metacognition process that occurs emphasizes the representation between these two parameters, namely metacognition before the writing process and metacognition in the writing process.

Another explanation is the difference in the variables representing the two parameters, where knowledge about cognition with 3 variables and regulation of cognition with 5 variables. The difference in the number of these variables affects the number of predictors representing metacognition that affect the English writing skills. The more predictors, the more factors that represent metacognition to be considered. Of the eight variables in this metacognition, there were three which became the most significant predictors compared to the other predictors, namely the comprehension monitoring, debugging strategies, and evaluation, in which all of them were in the regulation of cognition.

6. Conclusions

This study aims at investigating the correlation between the students' writing skills and each metacognition parameter, exploring its correlation strength and direction. Results and discussions concluded that first, there was a significant and unidirectional correlation between metacognition and writing skills, in general, and between each variable of metacognitive knowledge and regulation of cognition with the student's writing skills, in particular. Second, knowledge about cognition and regulation of cognition together affect the English writing skills with an influence level of up to 41.7%, and each variable of the two parameters gave a great influence on the English writing skills up to 82, 2%.

Those findings above mean that an aware student or a student with good metacognitive skills will have good self-regulated learning skills, which enable him to establish reasonable writing goals and plan his writing based on appropriate writing strategies. As a consequence, his writing score will improve. This conclusion suggests that stimulating students' awareness of their thinking process or metacognition during the process of writing is important. Furthermore, the pedagogical implication of these results lies in a better understanding of students' differences in awareness of knowledge and regulation of cognition and their role in increasing the students' writing skills. This will help teachers to be supportive and encourage them to develop lesson plans that accommodates this notion.

The limitation of this study involves the number of this study participants that were only a few. Future studies should explore more students from a variety of backgrounds and considering many

other factors. Despite these limitations, the findings can serve as a reference for future research regarding the relationship between metacognition and writing.

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