Metacognitive Learning Approach in Affecting Students' Self-Regulated Learning in Writing Course

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Article Info	Abstract
	The research aimed to investigate the effect of metacognitive instruction on students' self-regulated learning (SRL) writing for Indonesian EFL students to have appropriate grammar and meaningful learning experiences. The methodology used was a quasi-experimental design. The research participants were 50 students from the University of Muhammadiyah East Kalimantan (UMKT) English department who took a writing course. The participants were divided into the experimental group that was taught with metacognitive instruction. In contrast, although the same teacher taught the control group and had similar learning materials, the teacher did not use metacognitive instruction. The data was taken through pre-test and post-test and analyzed through independent t-test with statistics tool SPSS. The results showed that the experimental group has a higher SRL score with significant results in overall score even though there is one component that is different from previous studies, namely knowledge of cognition. Some suggestions were proposed.
	Abstrak
	Penelitian ini bertujuan untuk mengetahui pengaruh pembelajaran metakognitif pada pembelajaran mandiri siswa (*self-regulated learning*) dalam pembelajaran menulis (*writing*) untuk siswa EFL di Indonesia agar dapat menggunakan grammar yang baik dan mendapatkan pengalaman belajar yang bermakna. Metodologi yang digunakan adalah desain kuasi eksperimental. Partisipan penelitian ini adalah 50 orang mahasiswa Jurusan Bahasa Inggris Universitas Muhammadiyah Kalimantan Timur (UMKT) yang mengambil mata kuliah *writing*. Partisipan dibagi menjadi dua kelompok, kelompok eksperimen (n = 25) dan kelompok kontrol (n = 25). Kelompok eksperimen diajar dengan instruksi metakognitif. Sebaliknya, kelompok kontrol, meskipun diajar oleh guru yang sama dan memiliki materi pembelajaran yang serupa, namun guru tersebut tidak menggunakan pembelajaran metakognitif. Pengambilan data dilakukan melalui pre-test dan post-test dan dianalisa dengan independent t-test dengan SPSS. Hasil penelitian menunjukkan bahwa kelompok eksperimen memiliki skor SRL yang lebih tinggi dengan hasil yang signifikan secara keseluruhan skor meskipun ada satu komponen yang berbeda dengan penelitian sebelumnya yaitu pengetahuan kognisi. Beberapa saran diajukan.

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INTRODUCTION

Successful communication relies heavily on the ability to comprehend the language and to produce the language. When either skill has failed to be carried out by a speaker or a language user, the communication process may have been delivered ineffectively. Therefore, the process is very vital. Writing as one of the academic skills needs more prominent efforts. It needs different properties and complexity from other language skills to deliver the speaker's messages more effectively (Widiati & Cahyono, 2001). Otherwise, communication would fail to stand. In such a situation, the teacher should notice the importance of having an appropriate approach for the students to learn writing.

However, in Indonesia, where English is a foreign language, English writing is still a problem (Ghufron & Ermawati, 2018; Mustafa et al., 2016; Widiati, 2002; Widiati & Cahyono, 2001). Not only was the writing course/subject complex from the students' perspective, but the students might not also know what to do and where to start. They seemed to be lost even with guidance from the teacher. Students writing in some levels of education did not meet the satisfactory results (Megawati, 2012; Widiati & Cahyono, 2001), although some attempts had been made through various approaches, including the current trend of technology and social media (Fithriani et al., 2019; Halim et al., 2019). Similar to what others have faced in writing courses, the researcher also encountered problems related to instructional approaches that could be the best for the classrooms.

One of the ways that can be done to cope with this problem is by elevating the students' autonomy and self-efficacy so that the students can adapt well to the writing process's difficulty, and their awareness of self-learning would improve as well as their self-confidence. The independence of learning would affect the success of their learning process.

Getting the students to learn and use the writing strategies is not enough. The goal of educating the students is to learn to learn, which means they should learn to be autonomous (Kobayashi, 2018). When learner autonomy is well established, the students have a big chance to succeed in their academic life. The process where the students get involved actively in learning with their metacognition, behavior, and motivation is called self-regulated learning (SRL) (Zimmerman, 2008). The students who possess SRL would be able to evaluate their learning actively. They would be able to plan, monitor, and evaluate the purpose of their learning and the final goal of the learning process (Kobayashi, 2018; Zimmerman, 2008).

Thus, meanwhile, most studies were focusing on listening skills. The purpose of study was to investigate the effect of metacognitive instructions in students' self-regulated learning (SRL) writing of Indonesian EFL students for one semester at a private university in East Kalimantan, Indonesia. Therefore, some research questions came up: Do metacognition instructions improve students' SRL in writing courses?

The SRL in writing was elaborated in some subsections, and therefore some sub-research questions followed; how do the instructions affect the students' self-efficacy?; how do the instructions affect the students' knowledge of cognition; how do the instructions affect the students' awareness of metacognition; and how do the instructions affect the students' strategic behavior?

Some studies related to SRL have been completed with almost similar motives, i.e., finding out how students can be the 'master' for the process of their independent learning (Zimmerman, 2008). Such a process has to be one of the main aims for educators because the students will learn independently. Their ability to self-motivate and solve immediate problems would develop as well.

A few years ago, a case study of SRL in writing had been conducted with one participant of the research (Kartika, 2015). The research purpose was to analyze SRL's effect on the academic writing of a student in Australia. The results showed that there were improvements in ordinary writing skills as well as writing marks. However, the study left some points for further investigation, namely a more extended research period and further investigation of its impact on motivation. Another perspective has also been inspected on SRL towards writing. A survey study was completed on

investigating the students' attitudes to SRL strategies (Abadikhah et al., 2018). The results indicated that most students in Iran have moderate to slightly high self-regulation in learning. A survey study of SRL was done (Ariyanti et al., 2018). The study is aimed at surveying EFL students' SRL in writing. The finding indicated that 19 percent of the research participants were well-regulated students, making them have better accomplishments than others. Meanwhile, 70 percent of the participants were at a moderate level, and the other 11 percent were poorly self-regulated, leaving the gap of how to improve the SRL in writing.

Metacognitive strategies have been a research interest for many researchers. A claim was induced that not many of them investigate the pedagogical practice of improving one's capacity to think metacognitively (Ellis et al., 2014). In contrast, metacognition is one of the keys to the success of *the operational stage* (child's development of Piaget's Cognition Theory). The metacognitive strategies are also the foundation for high-achieving students at developing their skills in many aspects of academics (Iwai, 2011).

In understanding the importance of metacognitive strategies, knowing the difference between cognitive and metacognitive strategies is needed. In modest definition, cognitive strategies are used when they function to obtain knowledge in specific ways. Meanwhile, metacognitive strategies occur when one monitors what he/she has learned and what is needed to learn (Smith et al., 2007). It has pedagogical implications if the teacher wants to see the students succeed academically. The teacher also needs to address metacognitive strategies to stimulate learning beyond the conventional way of teaching. Traditionally, the teacher gives a bunch of learning materials without helping the students analyze how to learn well. By doing so, students will be self-regulated in learning. They would learn effortlessly in applying the appropriate learning process as they are likely to succeed (Iwai, 2011; Kobayashi, 2018; Santisi et al., 2014; Smith et al., 2007).

METHODS

The study used a quasi-experimental design (Roever & Phakiti, 2017). The participants were 50 students, with 25 students in the experiment group and 25 in the control group. The experiment group was treated with a metacognitive learning approach, and the control group was not given such an approach. All participants were freshmen at the English Education department at a private university in East Kalimantan. The study was conducted in three months duration.

The data were collected through a pre-test and post-test with the Self-Regulated Learning in Writing Questionnaire. The questionnaire used for pre-test and post-test is the same as it was to measure their self-regulated learning scale. The questionnaire was developed from an adaptation of the Self-Regulated Learning in Listening Questionnaire with some aspects of self-regulated learning: Self-Efficacy, Knowledge of Cognition, Awareness of Metacognition, and Strategic Behavior (Kobayashi, 2018). The questionnaire items were set with a Likert scale from 1 (not at all true of me) to 5 (very true of me). Before collecting the data, the questionnaire was checked for construct validity with an expert, a university professor. Once the construct validity was done, the researcher continued with face validity. Some 20 students were invited to join a pilot test for reliability test and to use statistical analysis software, Cronbach alpha showed .889, indicating the items were reliable.

The data collection process was run in a period of eleven active weeks of the semester term. In the first week, a pre-test was given. From the second to the tenth week, the subjects in group A were given treatment in the writing course with metacognitive instruction. The other group studied the same learning materials but not with metacognitive instruction. The final data was collected through the post-test. The data were analyzed with an independent T-test by using IBM Statistical Package for Social Sciences (SPSS) program.

FINDINGS AND DISCUSSION

The research results are described by presenting the results of the impact of metacognitive learning instruction on SRL. There are four components of SRL that are assessed: Self-efficacy,

knowledge of cognition, awareness of metacognition, and strategic behavior. As explained in the method section, there were two groups involved in this study, the control and treatment groups. Therefore, the data were presented by considering these items.

Metacognitive strategies on self-efficacy

Following are the results of the two groups, both the control group and the treatment group. The first group is the control group. In the following table is the Self-Efficacy Control Group:

Table 1. Control group's self-efficacy

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
A1	25	2	3	66	2.64	.490
A2	25	2	4	78	3.12	.666
A3	25	2	4	76	3.04	.611
Valid N (listwise)	25					

Table 2. Self-efficacy of the treatment group

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
A1	25	2	4	84	3.36	.810
A2	25	2	5	97	3.88	1.013
A3	25	2	4	89	3.56	.583
Valid N (listwise)	25					

Remark:
A1: I think I can get a satisfactory grade in writing (writing) class
A2: I think I can understand the primary materials in writing class
A3: I think I can do the assignments and tests well in the writing class

Of the 25 respondents, in general, they showed valid data. In general, the control group showed the post-test results below that of the treatment group with a score of 2.9 compared to the treatment group who scored 3.6. Based on the collected data, the treatment group showed a higher mean score, at all aspects such as item A1, which shows the value of 3.36, item A2 with a value of 3.88, and item A3 with a value of 3.56.

Table 3. Mean difference Self-Efficacy

	Group	N	Mean	Std. Deviation	Std. Error Mean
(SRL) Self-Efficacy score	Control Group	25	2.9360	.33650	.06730
	Experiment Group	25	3.6000	.52520	.10504

Table 4. Self-efficacy t-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
(SRL) Self-Efficacy score	Equal variances assumed	3.947	.053	-5.323	48	.000	-.66400	.12475	-.91483	-.41317
	Equal variances not assumed			-5.323	40.863	.000	-.66400	.12475	-.91596	-.41204

To see how significant the results of the two groups' self-efficacy, an independent t-test was carried out. Table 4 and Table 5 show the self-efficacy results for the two groups with significant results p = 0.000 with a significant level of sig> = 0.05.

Metacognitive strategies on knowledge of cognition

Table 5 and Table 6 below show the cognition knowledge of the control and treatment groups. In general, of the three items (B1, B2, and B3), the control and treatment groups did not significantly

differ in the mean (control group: 3.07; experiment group: 3.33).

Table 5. Knowledge of Cognition of Control Group

	N	Minimum	Maximum	Mean	Std. Deviation
B1	25	2.00	4.00	3.0800	.64031
B2	25	2.00	4.00	2.9600	.67577
B3	25	2.00	4.00	3.1600	.62450
Valid N (listwise)	25				

Table 6. Knowledge of Cognition of Experiment Group

	N	Minimum	Maximum	Mean	Std. Deviation
B1	25	2.00	5.00	3.8800	.72572
B2	25	2.00	4.00	2.9600	.67577
B3	25	2.00	4.00	3.1600	.62450
Valid N (listwise)	25				

Remark:
B1: I can evaluate my learning progress
B2: I have clear goals when I study with a particular learning strategy
B3: I am aware of what learning strategies that I use

Table 7. Mean difference knowledge of cognition

	Group	N	Mean	Std. Deviation	Std. Error Mean
(SRL) Knowledge of cognition score	Control Group	25	3.0720	.38136	.07627
	Experiment Group	25	3.3360	.36387	.07277

Table 9. Knowledge of cognition t-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	95% Confidence Interval of the Difference Upper
(SRL) Knowledge of cognition score	Equal variances assumed	.160	.691	-2.504	48	.016	-.26400	.10542	-.47596	-.05204
	Equal variances not assumed			-2.504	47.895	.016	-.26400	.10542	-.47597	-.05203

When testing the hypothesis with a t-test, the results as shown in table 8 and table 9 did not show a significant difference between the treatment group and the test group with a sig value (2-tail) = 0.016 with a level of sig> = 0.005.

Metacognitive strategies on awareness of metacognition

Compared to the previous items, the items on metacognition awareness were seen to have a mean difference between the control group and the treatment group. In the control group, the mean score was 3.0, with the lowest score of 2.9 on items C4 and C5 and the highest on items C2 and C6 with a score of 3.2. Meanwhile, the mean score for the treatment group is at point 3.7, the lowest score in item C5 with a score of 3.6 and the highest on item C6 with a score of 4.2.

Table 9. Awareness of metacognition of the control group

	N	Minimum	Maximum	Mean	Std. Deviation
C1	25	2.00	4.00	3.0000	.57735
C2	25	2.00	4.00	3.2800	.67823
C3	25	2.00	4.00	3.1200	.66583
C4	25	2.00	4.00	2.9600	.53852
C5	25	2.00	4.00	2.9200	.57155
C6	25	3.00	4.00	3.2800	.45826
Valid N (listwise)	25				

Table 10. Awareness of metacognition of experiment group

	N	Minimum	Maximum	Mean	Std. Deviation
C1	25	2.00	5.00	3.7200	.73711
C2	25	2.00	5.00	3.8000	.64550
C3	25	3.00	5.00	3.6400	.63770
C4	25	3.00	5.00	3.6800	.62716
C5	25	3.00	5.00	3.6000	.64550
C6	25	3.00	5.00	4.2000	.64550
Valid N (listwise)	25				

Remark:

C1: I think it is important to understand my strengths and weaknesses as a student

C2: It is essential for me to know which learning strategies are the most effective and when to use them

C3: It is important that I monitor how well I write

C4: To improve my writing skills, I set my own study goals

C5: I ask myself regularly whether my learning progress is following the targets I have set

C6: After finishing my writing assignment, I try to evaluate my performance

Table 11. Mean difference awareness of metacognition

	Group	N	Mean	Std. Deviation	Std. Error Mean
(SRL) Awareness of metacognition score	Control Group	25	3.0960	.24406	.04881
	Experiment Group	25	3.7720	.26851	.05370

Table 12. Awareness of metacognition t-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
							Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)			Lower	Upper
(SRL) Awareness of metacognition score	Equal variances assumed	.007	.933	-9.315	48	.000	-.67600	.07257	-.82192	-.53008
	Equal variances not assumed			-9.315	47.569	.000	-.67600	.07257	-.82195	-.53005

The overall mean score of items of C1-C6 from groups A and B was calculated. The experiment group exhibits a higher mean score of 3.77 than the control group of 3.09, as shown in Table 11. As shown in Table 12, T-test was performed to see the significance of the differences between the two groups, which showed significant results with a sig (2-tailed) = 0.000 at sig = 0.05.

Metacognitive strategies on the strategic behavior

The final component of SRL is strategic behavior. This component is about how a person carries out specific strategies for self-learning. When identifying each item, the trend of both groups shows a different outcomes. The tendency of the experiment group to outperform the control group has indicated that they have better strategic behavior (see table 13 for the control group and table 14 for the experiment group).

Table 13. The strategic behavior control group

	N	Minimum	Maximum	Mean	Std. Deviation
D1	25	2.00	4.00	3.2400	.59722
D2	25	2.00	4.00	2.8400	.68799
D3	25	2.00	4.00	3.2800	.67823
D4	25	3.00	4.00	3.4800	.50990
D5	25	2.00	4.00	3.2400	.52281
Valid N (listwise)	25				

Table 14. Strategic behavior experiment group

	N	Minimum	Maximum	Mean	Std. Deviation
D1	25	3.00	5.00	3.9600	.61101
D2	25	2.00	5.00	3.6400	.70000
D3	25	3.00	4.00	3.7200	.45826
D4	25	3.00	4.00	3.4800	.50990
D5	25	3.00	5.00	4.1200	.66583
Valid N (listwise)	25				

Remark:

D1: To improve my writing skills, I regularly read written samples in English and practice
D2: To improve my writing skills, I write English words and expressions repeatedly to remember them.
D3: To improve my writing skills, I write my ideas on a notebook as an outline for developing paragraphs.
D4: To improve my writing skills, I learned to study languages in English.
D5: To improve my writing skills, I learned the basic structure of a sentence

Table 15. Mean difference in strategic behavior

	Group	N	Mean	Std. Deviation	Std. Error Mean
(SRL) Strategic behavior score	Control Group	25	3.2160	.26407	.05281
	Experiment Group	25	3.7840	.27641	.05528

Table 16. Strategic behavior t-test

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
(SRL) Strategic behaviour score	Equal variances assumed	.116	.734	-7.429	48	.000	-.56800	.07645	-.72172	-.41428
	Equal variances not assumed			-7.429	47.900	.000	-.56800	.07645	-.72173	-.41427

In total, the mean score in the control group was 3.2. This value is lower than the treatment group, with a value of 3.8. Furthermore, statistical tests were carried out to see the level of significance using the t-test. The test results show the value of $p = 0.000$ at the level of sig> = 0.05. Thus, it can be said that there is a significant difference.

Metacognitive strategies on students' SRL

Tabel 17. Mean difference of overall score

	Group	N	Mean	Std. Deviation	Std. Error Mean
Overall SRL Score	Control Group	25	3.0972	.14499	.02900
	Experiment Group	25	3.6684	.12562	.02512

Tabel 18. Overall score

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Overall SRL Score	Equal variances assumed	.643	.426	-14.888	48	.000	-.57120	.03837	-.64834	-.49406
	Equal variances not assumed			-14.888	47.046	.000	-.57120	.03837	-.64838	-.49402

In general, we can see the mean score results between the control and treatment groups with different values, namely 3.09 for the control group and 3.67 for the treatment group. It shows the difference in the post-test results of the two groups in an overall view of all items combined. Then, the t-test was carried out to see the significance of this value. The t-test results showed a significant value, namely p = 0.000 with a sig level> = 0.05.

In general, the four components of SRL are evaluated: Self-efficacy, knowledge of cognition, awareness of metacognition, and strategic behavior, showing promising results. Where overall, the treatment group had a higher SRL value. Even though, when viewed from each component, one component does not show significant results, namely knowledge of the technician. The two groups showed an average difference. However, the t-test of the group's findings did not show any significant results. Nevertheless, apart from these points, in general, the treatment group showed better results.

Self-regulated learning is believed to have a good impact on students' learning achievement. Hence, the better SRL possessed by the students, the higher of a possibility of better learning achievement. This is supported by several studies that have shown promising results (Abadikhah et al., 2018; Ariyanti et al., 2018; Kobayashi, 2018). Therefore, it is essential to see what can influence this factor, such as a teaching process that uses a metacognitive approach. This metacognitive strategy refers to the awareness of each student in thinking and learning, what they think and how they think related to learning situations (Goh, 2008). The application of learning strategies with this approach has a tangible impact on the SRL level of the students involved as participants in this study. It can be seen from the results presented in the research findings section; almost every aspect has increased significantly. Self-efficacy is the first component of SRL analyzed in this study. The study's findings showed a significant mean difference between the two groups; those who received learning materials with metacognitive strategy and those without a metacognitive strategy approach. It complements the findings from previous studies that motivation and self-efficacy can also be improved (Kartika, 2015).

Cognition knowledge is a component that does not get a significant difference from this study. One way to look at this situation is to look at it is from the mean score. The mean score for cognition knowledge as one of the components of SRL was 3.0 for the control group and 3.3 for the treatment group. It indicates that both groups have a moderate level of cognitive knowledge. This finding is consistent with previous research, where entry-level students had a more moderate SRL level (Abadikhah et al., 2018). By looking at the overall significant development of the learning experiment using the metacognitive strategy approach to student self-regulated learning, this can positively impact the development of student creativity (Hargrove, 2013). The evidence of the findings in this study shows that a positive change in the SRL that the participants own increases significantly and

can bring excellent opportunities for all participants. Several other studies have been conducted before in which SRL can impact motivation and increase learning outcomes (Ariyanti et al., 2018; Kartika, 2015; Kobayashi, 2018; Zimmerman, 2008).

CONCLUSION

Teaching and learning techniques that use metacognitive strategies can significantly affect students' self-regulated learning. Of the four components: Self-efficacy, knowledge of cognition, awareness of metacognition, and strategic behavior, there are three that have a significant impact from experiments, namely self-efficacy, metacognition awareness, and strategic behavior. Meanwhile, knowledge of cognition did not have a significant effect even though, on average, there was an increase in the overall mean score. However, the level of knowledge of cognition is still in a moderate position, which is typical in early grade students, according to findings in previous studies. The advantage of increasing SRL is that it is closely related to several aspects that support student learning outcomes. Some of them are increased motivation and academic success. Motivation is an essential part of the learning process. Students will be able to participate more actively and be more involved in any activity or activity that the instructor or teacher has designed. That way, they open the opportunity for academic success and provide maximum results.

The researcher provides suggestions for several parties who might benefit from this research based on the explanation above. First, teaching with this metacognitive strategy approach increases SRL for practitioners who teach in class. Thus, using this approach to be implemented in the classroom might help solve one of the many problems the school faces. Second, for researchers, this research was conducted in a higher education setting. There is still a gap to see whether the results obtained will be consistent if it is carried out with different backgrounds and student situations. Likewise, a more detailed explanation of the results of our findings can be carried out using qualitative methods to obtain further confirmation.

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