

### The Effect of Preview, Question, Read, and Summarize (PQRS) Strategy on Indonesian EFL Students' Writing Ability across Working Memory Capacity Levels

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Received: 2017/05/31

Accepted: 2018/01/08

**Abstract:** This study aimed at investigating the effect of Preview, Question, Read, Summarize (PQRS) Strategy on EFL students' writing ability by considering their working memory capacity (WMC) levels. It involved Indonesian English as a foreign language (EFL) students of English Department in *Universitas Negeri Malang*, one of the leading universities in Indonesia. This study applied a quasi-experimental design and compared the writing ability of two intact groups of students. The data were collected by using writing tests and a WMC test. The results of the research revealed that there was a significant difference between the students who were taught by using the PQRS strategy and those who were not taught by using that strategy. However, there was no significant difference in the writing ability of the EFL students across WMC levels. Theoretically, this study supports the important roles of integrated reading-writing instruction in the teaching of writing. Pedagogically, in the teaching of writing, EFL teachers might apply the PQRS strategy as part of integrated reading-writing instruction to EFL students regardless of the difference in their WMC levels.

**Keywords:** PQRS Strategy, Working Memory Capacity, Writing Ability.

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ISSN (Online): 2322-5343, ISSN (Print): 2252-0198

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## Introduction

A number of research studies which examined effective strategies in teaching English as a foreign language (EFL) writing have been reported. The purpose of the studies was to find out various ways in teaching writing that could help the students write better. Moreover, the strategies could also be applied by EFL teachers who would like to help students write well. Commonly, writing is taught as a separate subject. However, the emergence of the Communicative Language Teaching (CLT) approach has led to the importance of integrating writing with other skills in an instruction (Delaney, 2008), more particularly reading. Accordingly, research studies on the integration of reading and writing instructions as one of the ways to develop the efficiency in the teaching of writing have been conducted (e.g. Muhammad, 2010; Tuan, 2012). The underlying idea is that reading and writing share several aspects in common (Brown, 2015; Olson, 2003 as cited in Kirin, 2010).

In the EFL context, some research studies which examined integrated reading and writing instruction were carried out in different levels of education, such as high school and college levels (e.g. Kirin, 2010; Shen, 2009). In Indonesia, research studies investigating integrated reading and writing have been conducted by using various research designs, for instance experimental or action research (Jayanti, 2014; Muhammad, 2010; Muzdalifah, 2012). However, there has been no study which employs the Preview, Question, Read, and Summarize (PQRS) strategy as part of integrated reading and writing instruction. Moreover, the available studies merely focused on whether the integrated reading and writing instruction improved the students' writing achievement. Therefore, the integrated reading and writing instruction needs to be examined further by involving other factors which have the probability to affect the students' success, more particularly individual differences in terms of working memory capacity (WMC) levels. Researchers claim that WMC is an important factor which affects the English language learners' success (Fotkamp, 1999; Guara-Tavares, 2013; Lee, 2014; Yi & Ni, 2015). Besides, further research on the relation between writing ability and students' WMC need to be conducted due to varied contradictory research results.

## Research Questions

In light of the aforementioned background, this study aimed to find out the effect of the PDRS strategy on the writing ability of Indonesian EFL students across working memory capacity levels. The research problems are formulated as follows:

(1). Do the students who are taught by using the PQRS strategy have better writing ability than those who are not taught by using the PQRS strategy?

(2). Do the students who have high level of WMC have better writing ability than those who have low level of WMC?

## Literature Review

The CLT approach highlights the importance of the integrative tasks between two or more skills (Delaney, 2008; Brown, 2015) instead of the teaching of four language skills (i.e., listening, speaking, reading, and writing) as separate subjects. Besides, focusing on creating the meaningful learning and the development of learners' communicative competence, the integration of language skills allows teachers to employ various activities into the lesson. Reading in particular can be integrated in writing instruction to optimize the learning of both reading and writing skills.

The integration of reading and writing instruction is one of various types of teaching integrated skills in a lesson. This is because reading and writing share several aspects in common (Brown, 2015; Kirin, 2010; Shanahan & Lomax, 1988). Reading knowledge consists of three major components: word analysis, word meaning and text comprehension; meanwhile, the writing knowledge consists of four components: spelling, vocabulary diversity, syntactic complexity, and story structure complexity (Shanahan & Lomax, 1988). Shanahan and Lomax (1986, 1988) found that an effective way to explain the relationship between reading and writing is through the interactive model. This model suggests that reading can influence writing development and vice versa.

Moreover, the integration of reading and writing is supported by the constructivism theory. Constructivism theory which was proposed by Piaget (1974, cited in Williams & Burden, 1997) posits that people will produce knowledge through experiences. This theory emphasizes that the teacher should provide concrete and contextually meaningful experience for the students. Through the integration of reading and writing instruction, the teacher will provide the students with reading materials which have related to the topic before the students write an essay. It means that the teacher provides them with the literacy experience. This helps the students activate and build their schemata related to the topic assigned. Thus, the reading experience helps the learners generate ideas and present their ideas in their writing.

The PQRS strategy in this study is an instruction integrating reading and writing tasks conducted inside the classroom. The implementation of the PQRS strategy involves the process writing approach. The previewing, questioning, reading, and summarizing activities will be combined with the process writing approach. Tribble (1996, cited in Badger & White, 2000) mentioned that there are four stages in producing a piece of writing using process writing approach: pre-writing, drafting, revising, and editing. There are some characteristics of the process writing approach. This approach focuses on the process of writing which leads to the final written product. The students will write by following steps by steps of writing. Moreover, the students will have time to revise their writing as revision is also an important aspect. Through the writing process, the students will get feedback before they come to their final product.

The PQRS strategy supports the effectiveness of the use of information from the reading materials in students' writing. Based on the information processing theory, human's working memory has a very limited capacity. Information which human receives begins to lose within 15-30 seconds if other action is not taken or the information is unrehearsed (Lutz & Huitt, 2003). With the application of the PQRS strategy, the information from the reading material will become the input information. It will go to the second stage of information processing which is called as a working memory. In this strategy, summarizing as a rehearsal tool will be beneficial to help the students retain the information. Later, it will be useful for the future retrieval in the upcoming task which is writing. The PQRS strategy will be beneficial for the students in the pre-writing and drafting stages. The reading materials become the stimulus for the students to know better about the topic. Moreover, the information they get can be utilized while planning and drafting their essay. Next, they can continue to the next stages of writing process which are revising and editing before they come with the final product.

There are some studies which investigated the effect of integrated reading and writing instruction. Tuan (2012) conducted a study to investigate the extent to which an integration and reciprocal interaction of reading and writing was beneficial for the writing ability of EFL students at Ho Chi Minh City University of Finance-Marketing. He found that the students in the experimental group showed better writing achievement than the students in the control group. Shen (2009) conducted a study involving EFL students attending General English class at a technical university in the central part of Taiwan. Shen found that the students not only showed improvement in the language use but also in their critical thinking in writing.

There was transfer use of vocabulary and grammar rules from the text found in the students' essays. A study conducted by Muhammad (2010) aimed to improve the ability of the students of English department of a university in Indonesia in writing a descriptive essay. The result revealed that the strategy could help the students to improve the content quality of their descriptive essay. However, the researcher claimed that the reading activities should have been done in class so that the teacher could assist the students during the reading process.

It can be seen that many previous studies focused on the effect of integrated reading and writing instruction on students' writing ability. The effect of reading and writing integration should be investigated by considering other factors which probably contribute to the students' learning outcome. Students' individual differences are considered as the potential factors which may affect the learners' success. Schnur and Wright (2013) stated that WMC is an individual difference that impacts the way second language learners perform in the classroom. WMC has been claimed to have an essential role in various cognitive tasks, such as in comprehension and production of language (Daneman & Carpenter, 1980, 1983; Just & Carpenter, 1992, cited in Bergsleithner, 2010). Baddeley and Hitch (1974, cited in Bergsleithner, 2010) explained that working memory (WM) is the human cognitive system that refers to the storage and processing of information during complex cognitive tasks, for example during language tasks performance. WM also enables complex cognitive activities that require the integration, coordination, and manipulation of multiple bits of mentally represented information. According to Baddeley (1986), in WM there is an integral relationship between three components: phonological loop (for verbal and speech-based material), visuo-spatial sketchpad (for visual and spatial information), and central executive (an attention control system which integrates information from different WM subsystem and long-term memory; allocates resources; generally organizes and supervises working memory operations).

A number of research studies (e.g. Fotkamp, 1999; Guara-Tavares, 2013; Lee, 2014) have examined WMC in various language skills. Fotkamp (1999) investigated the correlation between WMC and fluent EFL speech production. The results revealed that WMC correlated significantly with fluency at the discourse level and also correlated significantly with reading-related tasks which aimed at assessing fluency at the articulatory level. This is in line with the study conducted by Guara-Tavares (2013) which investigated the relationship between WMC, pre-task planning, and second language (L2) speech performance. The L2 speech performance was analyzed in terms of fluency, accuracy and complexity. The result

showed that there were significant correlations between WMC and accuracy in spontaneous conditions. Moreover, there were significant correlations between WMC, fluency and complexity in planned conditions. In reading skill, a study conducted by Lee (2014) aimed to explore the relative contribution of WMC to L2 reading comprehension of Korean college students. The results revealed that WMC contributed to L2 reading comprehension of advanced users of English.

Results of other research studies showed the significant impact of the WMC on writing achievement. Yi and Ni (2015) who conducted a study involving Chinese EFL learners found that WMC had a significant impact on syntactic complexity and fluency in writing. Schnur and Wright (2013) conducted a study which aimed to investigate the relationship between WMC and L2 writing proficiency, while considering the potential moderating influence of learner anxiety on WMC. However, the result showed that there was no correlation between WMC and students' writing ability as well as WMC and their anxiety. However, the researchers mentioned that WMC as an individual difference which varies greatly among students could potentially affect the students' performance in an L2 classroom. The negative correlation found in this study was affected by the small number of students involved in the study.

Stated briefly, numerous studies have investigated the effectiveness of integrated reading and writing instruction on writing achievement. However, there has been no study which employs the PQRS strategy which might improve the integration of reading-writing instruction. Moreover, there has been no study which involves WMC as a factor which may affect the effectiveness of the strategy. There are also few studies which have explored the relationship between WMC and writing performance in EFL context, especially in Indonesian EFL context. Therefore, this study is carried out to examine the effect of PQRS strategy on writing ability of Indonesian EFL students across WMC levels.

## Method

This study applied a quasi-experimental design. It involved 48 EFL students of *Universitas Negeri Malang*, one of the leading universities in Indonesia. The students were taking Argumentative Writing course when the study was conducted. Two intact classes were assigned as an experimental group and a control group. The students in the experimental group were taught to write an argumentative essay by using the PQRS strategy while those in the control group were taught to write an argumentative essay without using the strategy. The

strategy was implemented in eight sessions, including the pre-test and post-test which were given in the first and last sessions, respectively. The second up to seventh meetings were for the treatment using the PQRS strategy.

The instruments used for data collection were writing tests and a WMC test. The writing test was administered to measure students' writing ability. The students were asked to write two essays: before the treatment (pre-test) and after the treatment (post-test). For the pre-test, they students were asked to write about "Should job applicants have a work experience?" while for the post-test, they were asked to write about "Should a school holiday be long (more than two weeks)?" The students' essays were assessed on five components, each with their maximum score: content (30), organization (20), vocabulary (20), grammar (20), and mechanics (10). The scoring rubrics proposed by Jacobs, Zinkgraf, and Wormuth, et al. (1981) was used as a basis to score the students' work. The students' essays were scored analytically to represent various aspects of learning with high reliability (Brown & Abeywickrama, 2004; Weiggle, 2002).

The second instrument was a WMC test proposed by Turner and Engle (1989). Turner and Engle's test was chosen as it has been frequently and effectively used by other researchers to measure WMC (Bergsleithner, 2010; Prebianca, 2009). The WMC test was in the form of operation-word span test (OSPAN) which was administered to the students individually in a silent room and noted. The scores from the test were used to classify the students based on their WMC levels. The data were tabulated into statistical data and then analysed by using SPSS (Statistical Package for the Social Sciences) program 20.0 version.

The criteria of acceptance or the rejection of null hypothesis ( $H_0$ ) was at the level of significant  $\alpha = .05$ . If the observed significance level was less than  $.05$  ( $p \leq .05$ ), then  $H_0$  can be rejected. It means that the alternative hypothesis was accepted or there is a significant difference between students who are taught by using the PQRS strategy and those are not taught by using the PQRS strategy. However, if the observed significance level was greater than  $.05$  ( $p \geq .05$ ) then  $H_0$  cannot be rejected. If the null hypothesis was not rejected, it means that there was no significant difference between the students who were taught by using the PQRS strategy and those who were not taught by using that strategy.

Prior to the hypothesis testing, statistical tests were conducted to check the homogeneity and the distribution of the data. The analysis aimed to see whether the statistical assumption was fulfilled or not as it affected the statistical analysis. The tests measured the difference between scores of the students in the experimental and control groups (see

Appendix A). In addition, independent sample *t*-test was used to see the difference of the achievement between students with high and low WMC. Firstly, the students' writing scores were ranked on the basis of the WMC scores (see Appendix B). The middle-point scores of the students were not analysed in order to see the clear difference between the students of high and low WMC levels. After computing the homogeneity and normality results between the students based on the WMC levels, the independent *t*-test was conducted.

## Results

The results of the study were used to answer the research questions. The first research question is related to the effectiveness of the PQRS strategy on students' writing ability. Table 1 shows the descriptive statistics of the data.

**Table 1.** *Descriptive Statistics of the Data*

Descriptive Statistics	Control		Experimental	
	Pretest	Posttest	Pretest	Posttest
Sample (N)	22	22	26	26
Minimum Score	57	61	60	63
Maximum Score	78	88	80	95
Mean	69.41	78.86	69.35	82.77
Standard Deviation	6.05	7.93	5.02	7.87

Table 1 shows that there are 26 students in the experimental group and 22 students in the control group. For pre-test, the minimum score of students in the experimental group is 60 and in the control group is 57. The maximum score in the experimental group is 80, while the maximum score in the control group is 78. The mean for the experimental group is 69.35 and the mean score of the control group is 69.41. The standard deviation in the experimental group is 5.02 and in the control group is 6.05. For posttest, the minimum score of students in the experimental group is 63 and in the control group is 61. The maximum score in the experimental group is 95, while the maximum score in the control group is 88. The mean score for the experimental group is 82.77 and the mean of the control group is 78.86. The standard deviation in the experimental group is 7.87 and in the control group is 7.93.

Before the data were analyzed, it was necessary to test the homogeneity and normality of the variables. A homogeneity test aims to measure that both groups in the study are equal. The result of homogeneity test is shown in Table 2.

**Table 2.** *The Result of the Homogeneity Testing of Variance*

Group	N	Lavene's Statistic	Sig.	Homogeneity
Experimental Group	26	1.510	.225	Homogenous
Control Group	22			

Table 2 presents the result of homogeneity test which was conducted by using Lavene's test. If the observed significance level or  $p$ -value of Lavene is higher than the level of significance .05 ( $\geq .05$ ), so the experimental and control groups are homogenous and vice versa. From the result of homogeneity test above, it was clear that both experimental and control groups are equal, since the observed significance level was .225 which was higher than .05.

To determine whether sample data have been drawn from a normally distributed population, a normality test was applied. The result of normality test of the experimental and control group is shown in Table 3.

**Table 3.** *The Result of the Normality Test*

Group	N	Komolgrov-Smirnov Z	Sig.	Normality
Experimental	26	.617	.842	Normal
Control	22	.711	.692	Normal

Table 3 presents the result of normality test which was conducted by using Kolmogorov-Smirnov Test. If the observed significance levels of Kolmogorov-Smirnov are higher than the level of significance .05 ( $p \geq .05$ ), the variables are normally-distributed and vice versa. From the result of the normality test above, it was clear that both of the experimental and control groups were normally distributed, since the observed significance levels of them were .842 and .692 respectively which were higher than 0.05. Thus, it could be concluded that the writing scores of both groups are normally-distributed.

To examine the effect of the PQRS strategy on students' writing ability, ANCOVA (Analysis of Covariance) was used in this study. The result of the analysis is presented in Table 4.

**Table 4.** *Output of the ANCOVA Calculation of the First Hypothesis*

Source	Sum of Square	Df	Mean Square	F	Sig.
Pretest	895.397	1	895.397	20.434	.000
Posttest	186.483	1	186.483	4.256	.045
Galat (Error)	1971.809	45		43.818	
Corrected Total	3048.979	47			

In Table 4, the analysis to know the difference between the group of students who are taught by using the PQRS strategy and control group on their writing ability shows that the F score is 4.256 with the sig. .045. The significance value was less than .05 ( $.045 \leq .05$ ). It can be concluded that there is a significant difference of the students' writing achievement between those who were taught by using the PQRS strategy and those who were not taught using the PQRS strategy. In other words, the use of the PQRS strategy in teaching writing significantly affected the students' writing ability.

The obtained mean of writing test of the students in the experimental group after the treatment was 82.77. Meanwhile, the obtained mean of the control group was 78.86. To conclude, the teaching of writing by using the PQRS strategy helps the students to get better writing ability than the students who were not taught using the PQRS strategy. For further analysis, the results of the post-test were based on the writing aspects: content, organization, vocabulary, language use, and mechanics. The results are shown in Table 5. It shows the mean differences of the writing components in the post-test results of the experimental and control groups.

**Table 5.** Mean Difference of the Writing Components

Group	Writing Components				
	Content	Organization	Vocabulary	Language Use	Mechanics
<b>Experimental</b>	25.13	17.62	13.35	17.75	8.56
<b>Control</b>	22.25	16.93	12.93	17.68	8.75

The mean of the scores of content component of the students in the experimental group was 25.13 and in the control group was 22.25. In terms of the organization, the mean of the scores of organization component in the experimental group was 17.62 and in the control group was 16.93. The mean of the scores of vocabulary of experimental group was 13.35 and in the control group was 12.93. With regard to language use, the mean of the scores of the experimental and control groups were 17.75 and 17.68 respectively. For mechanics, the mean of the scores for the experimental and control groups were 8.56 and 8.75, respectively. The content of the writing weighted heavier than other components. To see the significant difference of the scores of content component among the two groups, independent *t*-test was employed. The result of the test can be shown in Table 6.

**Table 6.** *Output of the Independent t-test Calculation of the Content Component*

Variables	Group	N	Mean	Obtained t-value	Df	Sig.	Description
<b>Content Component</b>	Experimental Group	26	25.42	2.886	46	.006	Significantly Different
	Control Group	22	22.41				

The test revealed that the sig. .006 is less than .05 level of significance. Since the  $p$ -value is less than .05 ( $.006 \leq .05$ ),  $H_0$  is rejected. It leads to the rejection of the null hypothesis. This means that there was a significant difference between students' scores of content component in experimental group and in control group.

The next analysis is to answer the second research question about the effectiveness of PQRS strategy on students' writing ability as observed from different working memory capacity levels, the result of the statistical computation is shown in Table 7.

**Table 7.** *Descriptive Statistics of High Level WMC Students and Low Level WMC Students.*

Descriptive Statistics	High Level of WMC	Low Level of WMC
<b>N</b>	12	12
<b>Minimum</b>	70	63
<b>Maximum</b>	95	91
<b>Mean</b>	85.67	81.00
<b>Std. Deviation</b>	7.02	8.29

Table 7 shows that there are 12 students in high level of working memory capacity and 12 students in low level of working memory capacity. The minimum score of students in high level of working memory capacity is 70 and in low level of working memory capacity is 63. The maximum score in high level of WMC is 95, meanwhile the maximum score in low level group is 91. The mean score for high level of WMC is 85.67 and the mean score of low level WMC is 81.00. The standard deviation in high level of WMC group is 7.02 and in low level is 8.29.

Before the data were analyzed, it was necessary to test the homogeneity and normality of the small groups (high WMC level and low WMC level). A homogeneity test aims to measure that both the small groups of students with high level of working memory capacity and with low level of working memory capacity in the study are equal. The result of homogeneity test is shown in Table 8.

**Table 8.** *The Result of the Homogeneity Testing of Variance (WMC Groups)*

Group	N	Lavene's Statistic	Sig.	Homogeneity
High Level Working Memory Capacity Group (Experimental)	12	.333	.570	Homogenous
Low Level of Working Memory Capacity Group (Experimental)	12			

Table 8 presents the result of homogeneity test which was conducted by using Lavene's test. If the observed significance level or  $p$ -value is higher than the level of significance .05 ( $\geq .05$ ), so the high WMC level and low WMC level groups are homogenous and vice versa. From the result of homogeneity test above, it was clear that both high WMC level and low WMC level groups are equal, since the significance level of them was .570 which was higher than .05.

To determine whether the data of both groups (high WMC level and low WMC level) have been drawn from a normally distributed population, a normality test was applied. The result of normality test of the experimental and control group is shown in Table 9.

**Table 9.** *The Result of the Normality Test (WMC Groups)*

Group	N	Komolgrov-Smirnov Z	Sig.	Normality
High Level Working Memory Capacity Group (Experimental)	12	.446	.989	Normal
Low Level of Working Memory Capacity Group (Experimental)	12	.631	.821	Normal

Table 9 presents the result of normality test which was conducted by using Kolmogorov-Smirnov Test. If the observed significance levels of Kolmogorov-Smirnov are higher than the level of significance .05 ( $\geq .05$ ), the variables are normally-distributed and vice versa. From the result of the normality test above, it was clear that both groups with high level of WMC and low level of WMC are normally distributed, since the observed significance levels of them were .989 and .821, respectively, which were higher than .05. Thus, it could be concluded that the writing scores of both groups are not normally-distributed.

For further analysis of to see the effectiveness of the PQRS strategy on the writing ability of students across WMC levels Independent  $t$ -test is employed. The result of the test is shown in Table 10.

**Table 10.** *Output of the Independent t-test Calculation of the Second Hypothesis*

Variables	Group	N	Mean	Obtained t-value	Df	Sig.	Description
Argumentative Writing Ability	High level of WMC	12	85.67	1.488	22	.151	Not Significantly Different
	Low level of WMC	12	81.00				

The test revealed that the sig. .151 is more than .05 level of significance. Since the  $p$ -value is greater than .05 ( $.151 \geq .05$ ),  $H_0$  cannot be rejected. This means that there was no significant difference between students who have high level of WMC and those who have low level of WMC taught by using the PQRS strategy.

## Discussion

The results of the study reveal that there is a significant difference on students' writing ability between the students who are taught using the PQRS strategy and those who are not taught using that strategy. This means that teaching integrated reading and writing using the PQRS strategy helps the students get better writing ability. This finding supports the result of a previous study conducted by Tuan (2010). The results of his study revealed that the students in the experimental group got better improvement of the essay writing rather than those in the control group. However, unlike the previous study, this study employed the PQRS strategy as a part of the integrated reading and writing instruction. The activities in the strategy also facilitates the students to understand the reading text well. The research found that better readers are generally better writers (Juel, 1988; Loban, 1963; Woodfin, 1968 as cited in Koons, 2008).

Moreover, the summarizing step serves as a rehearsal tool of the information that the students get from the text rather than directly asked them to write their essay. According to Oshima and Hogue (1983, cited in Cahyono, 1992), summarizing presents the comprehension of a large amount of information. Cahyono mentions that the activity in summarizing is done by the students to select the main ideas and main supporting ideas. Then, the students will write them down into fewest possible sentences. In this study, the students write a paragraph summary of the information they get from the text. By having this summarizing step which focuses more on helping the students to improve the content quality of their writing, the

further analysis of content component is conducted. Interestingly, the result shows that the score of content component of the students in the experimental group was significantly higher than the score of content component of the students in the control group. Thus, the PQRS strategy is significantly effective to help the students get better achievement of content component of their writing.

The result of the present study also supports a study conducted by Muhammad (2010) who investigated the effect of integrated reading and writing instruction on the writing ability of the English Department students. He found that the students can improve their ability in writing descriptive essays in terms of the content quality. It was in line with the result of this as the experimental group students outperformed the control group students in terms of content component of their essay. In an argumentative essay, the students are required not only to develop their arguments and support them with evidences. They also have to acknowledge the opponents' opinion and provide refutation toward them. The amount of ideas that they need to develop were supported by the ideas they found in the text.

In line with the present study, Shen (2009) found that literacy experiences were beneficial to improve the first-year EFL college student's writing skill. Shen examined how students transferred words, contents, and structures from their reading to writing. Results indicated that the learners get linguistic progress and also critical thinking. The students were able to analyze the information, such as relating the text to previous experiences. The reading activity became stimulus for students' imaginative world to develop their text. There was also transfer use of vocabulary from the text found in the study. The researcher claims that reading served not only as a stimulus for expansion of ideas but also as a linguistic model for the use of words and sentence structures. This result supports the notion that learners who read stories with more complex patterns use more complex structures in their writing. However, unlike the present study, the use of reading text was not only able to improve students' content quality of their essays. Weaver (1994) and Zamel (1992) as cited in Abu-Akel (1997) mention that studies which investigated to improve writing by providing reading experiences instead of grammar study or additional writing practice found that these experiences were as beneficial as, or more beneficial than, grammar study or extra writing practice.

Second, the result of this study found that there is no significant difference between students who have high level of WMC and those who have low WMC taught by using the PQRS strategy. This means that the WMC as an individual difference factor has no

contribution to the students' achievement. The result is in contrast with the study conducted Yi and Ni (2015) which found that WMC had a significant impact on syntactic complexity and fluency in writing. However, unlike Yi and Ni's study, the present study analyzes the WMC contribution merely to whole score of students' writing ability. We did not analyze further to each aspect of writing such as the syntactic complexity to be correlated with the working memory capacity.

Meanwhile, the result of the present study was in line with a study conducted by Schnur and Wright (2013). The findings of the two research studies yielded negative result in the investigation of WMC and writing achievement. Schnur and Wright (2013) conducted a study which aimed to investigate and examine the relationship between WMC and L2 writing proficiency, while considering the potential moderating influence of learner anxiety on WMC. Their study was carried out with cooperation from intermediate students in an intensive English program (IEP). The working memory scores were compared to both scores representing student writing proficiency as well self-reported anxiety levels in order to determine whether higher WMC correlates positively with either writing ability or anxiety level. The result showed that there was no correlation between WMC with either the students' writing ability or with their anxiety. In this study with the implementation of PQRS strategy, WMC as an individual difference and varying greatly between the students, which are said that potentially and greatly impact their performance in an L2 classroom was not proven in this study. Thus, the results mean that we do not need to separate the students based on the WMC to implement the PQRS strategy in writing classroom.

The significant difference between the students who were taught by using the PQRS strategy and those who were not taught by using that strategy achievement gives the important point to the teachers on the importance of integrated reading and writing instruction to enhance students' learning achievement. However, the result which shows no significant difference between the students who have high level of WMC and those who have low level of WMC indicates that the effect of the strategy is not affected by the WMC factor. In other words, the teachers are able to employ the strategy to enhance the students' writing ability among EFL learners without separating the students based on their WMC.

## **Conclusion**

The results of the study revealed that there was a significant difference between students who were taught by using the PQRS strategy and those who were not taught by using the strategy.

This means that the PQRS strategy was effective to help the students get better achievement in writing. However, this study revealed that there was no significant difference between students who have high level of WMC and those who have low level of WMC. In light of these findings, EFL teachers are recommended to use the PQRS strategy as a part of integrated reading and writing instruction. The important role of the PQRS strategy may help the students to develop ideas which support their writing. Moreover, the summarizing activity in this strategy helps the students retain the information from the reading materials better and optimize the use of the information in their writing. However, because there is no significant difference between students who have high level of WMC and those who have low level of WMC, when teaching writing the teacher does not need to separate the students based on their WMC levels. For further researchers who are interested in conducting research in the same field, the effect of the PQRS strategy on students' writing ability as seen from writing WMC can be enhanced in longer treatment. Moreover, the effect of the strategy on different types of text and writing product still need further investigation.

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## Appendix A. Students' Writing Scores

No	Pretest		Posttest	
	Experimental group	Control Group	Experimental Group	Control Group
1	66	57	89	62
2	68	68	87	83
3	75	66	83	73
4	66	65	73	79
5	64	72	85	61
6	62	66	86	79
7	73	72	87	83
8	68	77	88	81
9	69	75	91	84
10	70	71	78	88
11	72	74	70	85
12	64	74	86	88
13	65	67	71	78
14	70	78	78	81
15	60	74	63	86
16	65	76	81	85
17	80	60	93	66
18	72	67	80	72
19	72	68	79	81
20	71	61	81	75
21	71	62	79	77
22	76	77	91	88
23	77	--	91	--
24	64	--	77	--
25	67	--	90	--
26	76	--	95	--
Total	1803	1527	2152	1735
Mean	69.35	69.41	82.77	78.86

**Appendix B. The Rank of Writing Scores of the Experimental Group Students' based on Working Memory Capacity Scores**

No	WMC Score	Writing Score
1	26	70
2	24	93
3	24	86
4	23	91
5	22	89
6	22	83
7	22	85
8	22	91
9	22	95
10	22	78
11	22	81
12	22	86
13	21	81
14	21	73
15	20	81
16	20	79
17	18	80
18	17	87
19	17	90
20	16	91
21	16	71
22	16	87
23	15	63
24	14	78
25	12	88
26	11	77

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