eISSN 2721-5016 | pISSN 2721-5024
International Conference on English Language Teaching
http://conference.unisma.ac.id/index.php/ICON/ICON-ELT
Volume 6 | Number 1 | p 279-285
Published on November 24th, 2025

Combination Strategies for Reading Comprehension in English Specific Purpose (ESP)

Haanii Pradini
[1]*Information System Department, Dharma Wacana University, Indonesia*
**) correspondence: pradinihaanii@gmail.com*

ABSTRACT

Strategies, which refer to students' behaviors to comprehend texts, have been explored in language learning. However, research on combination strategies (cognitive strategies and metacognitive strategies) for reading comprehension in ESP has not been explored. The researcher in the current research explores a significant difference in the combination strategies used by university students for reading comprehension in ESP. The subjects of the current research consisted of 34 university students in the experimental group and 34 university students in the control group. The data were analyzed by a true experimental design. The results indicated that there was a significant difference in the combination strategies used by university students for reading comprehension in ESP.
Keywords: combination strategies; reading comprehension; ESP; university students

INTRODUCTION

The use of cognitive strategies and metacognitive strategies in learning English as a Foreign Language (EFL) has been investigated, but the use of cognitive and metacognitive strategies used at one time in learning English for Specific Purpose (ESP) has not been investigated. A few examples include studies on cognitive strategies in EFL, specifically in reading comprehension (Asmara, 2016; Marzuki, Alim & Wekke, 2018; Sua, 2021; Thu', Anh & Nam, 2019; Tunga, 2021), which demonstrate that the use of cognitive strategies can help students understand texts better. Students employed metacognitive strategies to improve their reading comprehension, according to a related study on metacognitive strategies for reading comprehension in EFL (Al-Kiyumi, Seyabi & Hassan, 2021; Annury et al., 2019; Daguay-James & Bulusan, 2020; Ghaith & El-Sayounara, 2019; Mohseni, Seifoori & Ahangari, 2020).

It is crucial to point out that, despite the insights acquired in the EFL context, ESP course entails using more specialized language that is specific to certain academic or professional fields, which may call for the employment of various strategies. However, research shows that although more and less good ESP students may not have a substantial difference in their preference for particular strategies, they may use them differently in terms of frequency and efficacy. Therefore, there is a recognized necessity to integrate both cognitive and metacognitive strategies tailored to the specific needs of ESP students, which can lead to more efficient language acquisition and improved comprehension within their specialized fields. This gap highlights the potential value of further empirical research to explore how simultaneous utilization of these strategies optimizes learning outcomes in ESP setting (Pešić, 2022).

Therefore, teaching reading to the students is regarded as necessary. To comprehend the written text well, it is recommended that teachers apply strategies during the learning process. Suitable strategies are needed to help the students achieve optimal reading comprehension. Many strategies are needed to help the students. (Grabe, 2009) argued that some strategies and combinations of strategies can over time become fairly routine responses to reading goals. However, reading comprehension means the ability to process, understand, and comprehend the text by using the eyes and the brain to get the information, meaning, and answer the questions from the content of the text. In reading comprehension, cognitive strategies are needed to perform a task. Also, metacognitive strategies are needed to understand how the task is performed.

A study that readers using cognitive strategies through a variety of methods, and then recognize using metacognitive strategies when they lack understanding and consequently, choose the right tools to solve the problem (Prasetyorini, 2017). Nevertheless, metacognitive strategies have a direct effect on cognitive strategies (Anderson, 2005) and metacognitive strategies have a positive relationship to cognitive strategies used in reading comprehension (Phakiti, 2008). (National Reading Panel, 2000) showed that both cognitive and metacognitive strategies shown through meta-analyses, are effective when taught individually or in combination. Cognitive and metacognitive strategies can and must be taught to struggling readers, especially when they encounter unfriendly texts, to help them compensate for a lack of prior knowledge.

Although previous studies on EFL have appeared, the focus was not restricted to ESP course for university students. However, the previous studies have been well documented, but the researcher assumes those have not investigated the combination of cognitive and metacognitive strategies used at one time. The current research tried to find out whether or not a difference in using cognitive strategies itself compares with cognitive and metacognitive strategies, as suggested by the previous researchers, cognitive strategies essentially needed to be further investigated and have weaknesses. In this regard, the researcher believes that to find the most effective strategies to be used, the strategies need to be compared. In correlation with this concept, the cognitive and metacognitive strategies is important to be contrasted with cognitive strategies because the advantage of cognitive strategies in classroom instruction and learning is fundamental to successful learning (Ozek & Civelek, 2006).

Based on the background of the current research, this research aims to fill this gap by investigating whether there is a significant difference in reading comprehension between university students taught using cognitive strategies itself and those taught using a combination of cognitive and metacognitive strategies. The research question guiding this research is: Is there any significant difference between university students who were taught through cognitive strategies and those who were taught through cognitive and metacognitive strategies? By addressing this question, the study seeks to contribute valuable insights into effective teaching strategies for EFL students in an ESP course.

METHODS

This research employed a quantitative approach used by the researcher to investigate the difference in reading comprehension between the university students who were taught through cognitive strategies and those taught through cognitive and metacognitive strategies. Furthermore, the design of the current research was true experimental because it had control of extraneous variables, which refers to (Hatch & Farhady, 1982).

Since the researcher used a true experimental design, the sample of this research was chosen through random sampling. According to (Creswell & Guetterman, 2024) random sampling is a quantitative sampling procedure in which the researcher selects participants for the sample so that any sample of size N has an equal probability of being selected from the population. However, the subjects of the current research were two groups. The experimental group and the control group as the participants. In this design, it comprised pre-test, treatment, and post-test.

In the current research, the instrument was a reading comprehension test. The test was designed based on the learning objectives. In this term, the test was used to see the university students' reading comprehension. Moreover, to analyze the quantitative data, the researcher uses SPSS. The data obtained from the reading comprehension test will be compared before and after treatment.

RESULTS AND DISCUSSION

The primary objective of this research is to determine whether there is a significant difference in reading comprehension when using cognitive strategies compared to a combination of cognitive and metacognitive strategies. To illustrate the differences between the two groups, the results are presented in the following table.

Table 1 provides university students' reading comprehension with cognitive strategies in the control group. The pre-test score was 43.2, while the post-test score was 54.5, which means 43.2 < 54.5. It can be seen that there is a difference between university students' scores before and after treatment with cognitive strategies in the control group. Furthermore, it can be known that the minimum and maximum scores of the control group with cognitive strategies have increased, from 22 to 32 for the minimum score and from 62 to 82 for the maximum score.

Table 1

Students' Reading Comprehension with Cognitive Strategies in the Control Group

	Pre-test	**Post-test**
Min	22	32
Max	62	82
Mean	43.2	54.5

Moreover, Table 2 shows the results of university students' pre-test and post-test on the control group. It can be seen that the value sig. (2-tailed) was 0.000, which is lower than the p-value (0.05). If the value sig. (2-tailed) lower than the p value (0.05), it means there is a difference in university students' reading comprehension who were taught with cognitive strategies. In addition, Table 2 contains the value of the mean paired differences, which is 18.971. This value showed the difference between the mean outcomes pre-test and the mean outcomes post-test, with the lower (23.207) and upper (14.734) of the 95% Confidence Interval of the Difference. In this case, this research used a paired samples test at the level of trust 95% or the same as the value $\alpha = 5\%$. As the α value of this research is 0.05, the researcher found the value of the t-table using $\frac{\alpha}{2} = 0.025$. Yet, to see whether this research has a significant difference or not, the researcher compared the t-value and the t-table. It was found that the t-table was 2.03452 and the t-value was 9.110, or t-value 9.110 > t-table 2.03452. Hence, it can be known that this research has a significant difference.

Table 2

Statistical Calculation Comparing Mean Pre-Test and Post-Test Control Group

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest cog - Posttest cog	-18.971	12.142	2.082	-23.207	-14.734	-9.110	33	.000

Table 3 provides university students' reading comprehension with cognitive and metacognitive strategies on the experimental group. The pre-test score was 44.38, while the post-test was 66.8 which means 44.38 < 66.8. It can be seen that there is a difference with university students' scores before and after treatment with cognitive and metacognitive strategies on the experimental group. Furthermore, it can be known that the minimum and maximum scores of the experimental group with cognitive and metacognitive strategies have increased, from 22 to 48 for the minimum score and from 72 to 84 for the maximum score.

Table 3

Students' Reading Comprehension with Cognitive and Metacognitive Strategies on The Experimental Group

	Pre-test	**Post-test**
Min	22	48
Max	72	84
Mean	44.38	66.8

Besides, Table 4 shows the results of university students' pre-test and post-test on the experimental group. It can be seen that the value sig. (2-tailed) was 0.000, which is lower than the p-value (0.05). If the value sig. (2-tailed) lower than the p-value (0.05), it means there is a difference in university students' reading comprehension that was taught with cognitive and metacognitive strategies. Moreover, Table 4 contained the value of the mean paired differences, which is 32.229. This value showed the difference between the mean outcomes pre-test and the mean outcomes post-test, with the lower (36.179) and upper (28.278) of the 95% Confidence Interval of the Difference. In this case, this research uses a paired samples test in the level of trust, 95% or the same as the value $\alpha = 5\%$. As α value of this research is 0.05, the researcher found the value of the t-table using $\frac{\alpha}{2} = 0.025$. Yet, to see whether this research has a significant difference or not, the researcher compared the t-value and the t-table. It was found that the t-table was 2.03224 and the t-value was 16.580, or t-value 16.580 > t-table 2.03224. Hence, it can be known that this research has a significant difference.

Table 4

Statistical Calculation Comparing Mean Pre-Test and Post-Test Experimental Group

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest exg - Posttest exg	-32.229	11.500	1.944	-36.179	-28.278	-16.580	33	.000

The main purpose of applying these two strategies was to see whether cognitive and metacognitive strategies can be used to make better improvements than cognitive strategies or not. To see the significant difference between the two groups, the researcher computed the data on SPSS with the Independent Sample T-test. Table 5 presents the results that have been computed by the researcher.

Based on Table 5, Sig. Levene's Test for Equality of Variances was 0.674 > 0.05, which means the data between the experimental and control groups were homogeneous. However, the result of the computation in Table 5, it can be seen that the Sig. (2-tailed) was 0.000, which is lower than the p-value (0.05). If the Sig. (2-tailed) lower than the p-value (0.05) it means there is a significant difference in university students' reading comprehension between the control group and the experimental group. The results indicated that there is a significant difference in university students' reading comprehension in ESP that were taught with cognitive strategies and university students' reading comprehension in ESP that were taught with cognitive and metacognitive strategies.

Furthermore, the Mean Difference value of university students' reading comprehension in ESP was 26.23308. This value showed the different range of the university students' scores between the control group and the experimental group. The difference range of university students' scores was 17.09106 to 35.37510, of a 95% Confidence Interval of the Difference, Lower and Upper. In addition, Table 5 showed that the t-value was 5.728 and the t-table was 1.996. In this case, t value > t table or 5.728 > 1.996. Hence, it was found that this research has a significant difference in reading comprehension in ESP between the university students who were taught through cognitive strategies and those taught through cognitive and metacognitive strategies.

Table 5

Significant Difference between the Control Group and the Experimental Group

Independent Sample 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	Upper
N-Gain	Equal variances assumed	.178	.674	5.728	67	.000	26.23308	4.58015	17.09106	35.37510
	Equal variances assumed			5.723	66.581	.000	26.23308	4.58352	17.08328	35.38288

It is obvious from the findings of the results it was found a significant difference was found in reading comprehension in ESP between the university students who were taught through cognitive strategies, and those taught through cognitive and metacognitive strategies. By having the cognitive strategies which are: note taking, summarizing, elaboration, inferencing, and grouping (used in monitoring or while reading stage) combined with the stages of metacognitive strategies which are: planning, monitoring, and evaluating or before reading, while reading, and after reading, the students were able to understand. The university students' achievement was built mostly by themselves.

To enhance the university students' reading comprehension in ESP, the university students in this research are used the combination of cognitive strategies and metacognitive strategies and the cognitive strategies. In fact, the strategies were purposed to solve the university students' reading problem through the procedures that applied in reading comprehension in ESP.

By having the cognitive strategies in reading comprehension, the university students understand and comprehend the text well, which will lead them to be good language learners (Asmara, 2016). Therefore, the students can easily comprehend the text after receiving the treatment that is summarizing. In this case, Marzuki et al. (2018) argued that summarizing refers to making a written summary of new information gained through reading that enables the students to grasp the original text better and motivates students to actively participate in the classroom teaching and learning process. Hence, the results of the university students after receiving the treatment showed a better result in the post-test.

However, in this current research, not all problems can be solved only with cognitive strategies. For example, some of the university students could not get a reference in the pre-test. In this case, a university student could not answer the question and chose an incorrect answer for a question that was marked as determining reference. This because, the student lack of vocabulary knowledge, could not remember or did not know how to use synonyms or antonyms because there are too many words which are sometimes similar to each other, also had difficulty guessing the meaning of new words and its caused students lack for making a summary when they read cannot understand and get the points of the text (Thongwichit, 2019; Thu', Anh & Nam 2019; Tunga, 2021).

CONCLUSION

This research has demonstrated that there is a significant difference in reading comprehension achievement between university students taught through cognitive strategies and those taught through a combination of cognitive and metacognitive strategies in the context of ESP. The findings clearly indicate that while cognitive strategies such as note-taking, summarizing, elaborating, inferencing, and grouping contribute positively to students' understanding of texts, their effectiveness is substantially

enhanced when integrated with metacognitive strategies that involve planning, monitoring, and evaluating reading processes. This combination helps students become more autonomous and strategic learners by enabling them to better regulate their comprehension and problem-solving during reading.

The research affirms the importance of teaching both cognitive and metacognitive strategies simultaneously, especially in ESP courses where specialized language and complex texts require more sophisticated learning strategies. The improvement in post-test scores among students receiving combination strategies underscores the necessity for teachers to adopt a more comprehensive strategy to foster deeper comprehension and language acquisition. Moreover, the research highlights that cognitive strategies may fall short in addressing certain reading challenges, such as vocabulary deficits and inference difficulties, which metacognitive strategies help to mitigate.

Considering all the data gathered after finishing the research. This research has drawn up, when the university students use cognitive strategies and also cognitive and metacognitive strategies in reading comprehension, it makes a relationship to written language, and gives an improvement to the university students' reading comprehension. It is probable that it happens because of the strategies applied by the university students derived from their abilities. Cognitive strategies contribute during reading, and metacognitive strategies contribute before, during, and after reading.

In sum, the integration of cognitive and metacognitive strategies is more effective in improving university students' reading comprehension in ESP than the use of cognitive strategies. Therefore, it is recommended that ESP teaching programs incorporate both types of strategies in their curriculum to optimize students' outcomes and better prepare them for academic and professional communication within their specialized fields.

REFERENCES

Al-Kiyumi, O., Seyabi, F. A., & Hassan, A. H. (2021). An empirical study on the effect of instruction on metacognitive strategies on EFL reading comprehension: The case of foundation-level students in Oman. *International Education Studies*, *14*(8), 30-42.

Anderson, N. J. (2005). L2 learning strategies. In Handbook of *Research in Second Language Teaching and Learning*. Lawrence Erlbaum Associates, Inc.

Annury, M. N., Mujiyanto, J., Saleh, M., & Sutopo, D. (2019, August). The use of metacognitive strategies in EFL reading comprehension. In *First International Conference on Administration Science (ICAS 2019)* (pp. 62-66). Atlantis Press.

Asmara, N. I. (2016, November). An analysis of cognitive reading strategies used in reading comprehension. In *Ninth International Conference on Applied Linguistics (CONAPLIN 9)* (pp. 304-307). Atlantis Press.

Creswell, J. W., & Guetterman, T. C. (2024). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research*. Pearson. One Lake Street, Upper Saddle River, New Jersey 07458.

Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, *15*(1), 20-30.

Ghaith, G., & El-Sanyoura, H. (2019). Reading comprehension: The mediating role of metacognitive strategies. *Reading in a Foreign Language, 31*(1), 19-43.

Grabe, W. (2009). *Reading in a second language: Moving from theory to practice*. Cambridge University Press.

Hatch, E., & Farhady, H. (1982). *Research design and statistics for applied linguistics*. Rahnama Publication.

Marzuki, A. G., Alim, N., & Wekke, I. S. (2018, May). Improving the reading comprehension through cognitive reading strategies in language class of coastal area in Indonesia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 156, p. 012050). IOP Publishing.

Mohseni, F., Seifoori, Z., & Ahangari, S. (2020). The impact of metacognitive strategy training and critical thinking awareness-raising on reading comprehension. *Cogent education*, *7*(1), 1720946.

National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading*

and its implications for reading instruction: Reports of the subgroups. National Institute of Child Health and Human Development, National Institutes of Health.

Ozek, Y., & Civelek, M. (2006). A study on the use of cognitive reading strategies by ELT students. *The Asian EFL Journal*, *14*(1), 1-26.

Pešić, D. (2022). Cognitive and metacognitive strategies in foreign language listening comprehension at the studies of tourism–students' preference and university lecturers' utility rating. *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, *10*(2), 89-99.

Phakiti, A. (2008). Construct validation of Bachman and Palmer's (1996) strategic competence model over time in EFL reading tests. *Language testing*, *25*(2), 237-272.

Sua, M. R. (2021). Cognitive strategies for developing students' reading comprehension skills using short stories. *Revista de estudios y experiencias en educación*, *20*(44), 233-253.

Thongwichit, N. (2019). Another perspective on cognitive reading strategy use: Efficient and inefficient readers. *The New English Teacher*, *13*(2), 72-72.

Thư, L. M., Anh, K. H., & Nam, N. T. P. (2019). Effects of cognitive reading strategy training on reading performance of EFL students: A case of a high school in Vietnam. *Dalat University Journal of Science*, 87-105.

Tunga, S. G. (2021). Cognitive strategies utilized in reading critically by high and low achievers. *Lectio: Journal of Language and Language Teaching*, *1*(1), 1-12.