

Metacognitive Awareness of Reading Strategies as Predictors of Reading Comprehension Achievement among Students with Learning Disabilities in Nigeria

Kelechi U. Lazarus, Department of Special Education, University of Ibadan, Nigeria
Blessing I. Anwalimhobor, Department of Special Education, University of Ibadan, Nigeria

Corresponding author:
Kelechi U. Lazarus,
ppadaeze@yahoo.com

Article history: Received:
March 19, 2022 Revised:
June 11, 2023 Accepted:
June 13, 2023

Published online at
ijds.ub.ac.id

Copyright © 2023 Author(s)
Licensed under CC BY NC.



Abstract

Reading is an essential language skill in students' educational success. However, reports have shown that the most prevalent type of academic difficulties among secondary school students with learning disabilities is reading difficulties. Previous studies focused more on interventions to improve reading comprehension achievement of students with learning disabilities than on the influence of metacognitive strategies on students' reading comprehension achievement. This study, therefore, investigated the influence of metacognitive awareness of (before, during and after) reading strategies on the reading comprehension achievement of students with learning disabilities in Senior Secondary Schools (SSS) in Ibadan, Nigeria. The study adopted a descriptive research design. A sample of 100 students with learning disabilities was purposively selected from nine SSS in Ibadan, Nigeria. Instruments used were Academic records, Screening Checklist for Suspected Learning Disabilities, English Language Achievement Test, Metacognitive Awareness of Reading Strategies Questionnaire and the Reading Comprehension Test. Data collected were analyzed using the Multiple regression analysis at 0.05 level of significance. There was a joint contribution of the independent variables (metacognitive awareness of before, during and after reading strategies) to reading comprehension achievement ($F(3,96) = 3.61$; $R^2 = 0.101$). The result also reveals the relative contributions of metacognitive awareness of reading strategies (before, during and after) to the reading comprehension achievement among students with learning disabilities as follows: before ($\beta = 0.25$), after ($\beta = 0.23$) and during ($\beta = -0.17$) reading strategies. The study concludes that metacognitive awareness of (before, during and after) reading strategies influence reading comprehension achievement of students with learning disabilities. It is therefore recommended that students with learning disabilities should be trained on the use of metacognitive (before, during and after) reading strategies for improved reading comprehension achievement.

Keywords: Learning Disabilities, Metacognitive Awareness, Reading Strategies

1. Research Background

In today's world, especially in language learning, it is necessary for students to acquire major language skills such as reading, writing, speaking and also listening. But,

beyond acquiring these four major skills, students need to develop metacognitive ability to succeed in language learning. Metacognition is essentially an awareness of one's own cognitive processes. This is the single, most powerful tool for effective reasoning, learning and problem-solving. It is the ability to reflect upon the task demand and independently select and employ the appropriate reading, writing, mathematics or learning strategy. Metacognition refers to the ability to reflect upon, understand, and control one's learning (Schraw & Dennison, 1994). The term metacognition was first coined by Flavell (1976). It is defined as "cognition about cognition" or "thinking about thinking" (Flavell, 1978).

Metacognitive functions implemented by readers contribute greatly to their learning and particularly, reading comprehension achievement (Marzban, 2006, Mokhtari & Sheorey, 2008). Effective readers use strategies to understand what they read before, during and after reading. Baker (2008) stated that to become proficient readers, it is important that students employ metacognition and metacognitive strategies. Also, Garbe and Stoller (2002) averred that students who experience difficulties with reading equally have issues with reading comprehension and would require the use of various reading strategies for enhanced reading comprehension. This is because it is well known that the reading process itself is multifaceted and complex. Miller (2017) explained that metacognitive reading strategies and conscious attention to reading contribute significantly to reading comprehension because they enable learners to become independent in the reading process. Once learners become aware of which strategies work for them, it becomes easier for the attainment of reading goals.

Metacognitive reading strategies could be categorized into three: before reading, during reading and after reading strategies. Examples of before reading strategies include using prior knowledge to think about the topic, making predictions about the probable meaning of the text and previewing the text by skimming and scanning to get a sense of the overall meaning. During reading, proficient readers are regularly engaged in monitoring understanding for instance by questioning. They also engage in re-reading, recognizing clicks, clarifying clunks, thinking about and reflecting on the ideas and information in the text.

Similarly, some metacognitive after reading strategies include but not limited to the practice of reflecting upon the ideas and information in the text, relating what they have read to their own experiences and knowledge, clarifying their understanding of the text and extending their understanding in critical and creative ways. Proficient readers often use metacognitive strategies to comprehend text (Boulware-Gooden, Carreker, Thornhill, & Joshi, 2007; Pressley, Wharton-McDonald, Mistretta-Hampston, & Echevarria, 1998). Good readers employed multiple strategies before, during and after reading, and often used them in a coordinated manner. These strategies included predicting upcoming text content before reading, using questioning, creating mental images during reading, and summarizing following reading (Pressley & Afflerbach, 1995).

Extant literatures (Swanson, Kehler & Jerman, 2010; Baker & Brown, 1984) have shown that the good readers used a number of metacognitive strategies during reading and that this had greatly assisted them to comprehend text. Good readers, who were aware when they did and did not understand the text, used fix-up strategies when comprehension broke down. Sheorey and Mokhtari (2001) found that students' reading ability and achievement was related to their metacognitive awareness and use of reading strategies when reading. A study carried out by Fitriasia, Tan and Yusuf (2015) showed that there was a weak positive relationship between metacognitive awareness of reading strategies (MARS) and scores on the reading comprehension test. Fitriasia, Tan and Yusuf (2015) found that there was no significant difference in the mean level of metacognitive awareness of reading strategies between good and poor readers.

However, this is contrary to the finding of a research conducted by Pang (2008) which gave rise to the idea that good readers are also strategic readers who are not only more sophisticated to use various reading strategies but also, they are more sophisticated in terms of monitoring and regulating the strategies they use during the process of reading (Pang, 2008). Also, Barnett (1988) found that there is a significant correlation between perceived strategy use and reading comprehension among students. These findings are consistent with prior research which has shown that awareness and use of reading strategies are positively related to superior reading comprehension and successful learning (Alexander & Jetton, 2000; Pressley, 2000).

The finding of a study by Salataci and Akyel (2002) that involved the teaching of metacognitive reading strategies to university students for four weeks showed that at the end of the training in metacognitive reading strategies, the reading comprehension achievement of the participants improved. Thus, Salataci and Akyel (2002) submitted that a positive correlation existed between students' use of metacognitive reading strategies and their reading proficiency. Some studies have also noted that poor comprehenders failed to use reading strategies (Brown, Armbruster & Baker, 1986), while other studies have found that poor comprehenders have greater difficulty in adjusting strategy use according to text features (Palincsar & Brown, 1984).

In a study by Zhang (2013), it was found that students who indicated preference for the use of metacognitive reading strategies appeared to obtain higher scores in reading comprehension achievement than students who were not aware of metacognitive strategies as the latter possibly had low scores. A study by Miller (2017) examined the relationship between students reported metacognitive reading strategy choice (that is, whether global, support or problem-solving) reading strategies and English reading achievement scores. It was found that the most preferred metacognitive reading strategies were problem-based strategies followed by support reading strategies and then global reading strategies. Lazarus (2019) found that three comprehension monitoring strategies: rereading, clarifying concepts and vocabulary in the text and reflecting and reviewing the text before, during and after reading, positively correlated with achievement in reading comprehension of students with learning disabilities.

Conversely, Meniado (2016) found a correlation between reading motivation and metacognitive reading strategies, but did not find a correlation between reading achievement and metacognitive reading strategies. Therefore, Meniado concluded that though metacognitive reading strategies could be of substantial importance to students at intermediate level classes, they may not be the only factors influencing the reading achievement of students. Conversely, Sutiayatno (2019) found a correlation between metacognitive strategies and reading achievement among undergraduates in Indonesia. It was therefore concluded that for enhanced comprehension of English text books, students should improve on their awareness of metacognitive reading strategies. Further, students who attend institutions owned by the government demonstrated greater metacognitive awareness of reading strategies than those from privately owned institutions. Also, there were no substantial differences between students in the humanities and sciences with respect to metacognitive awareness of reading strategies for academic materials (Kazi, Moghal & Asad, 2020).

Students with learning disabilities often experience difficulties in reading comprehension that may be due to their inability to recognize and utilise metacognitive reading strategies before, during and after reading. Reading comprehension difficulties often leads to poor reading comprehension achievement and consequently school failure. Past studies largely focused on providing interventions to remediate reading comprehension difficulties among the students with little attention to understanding of factors influencing reading comprehension achievement such as awareness of metacognitive reading strategies among students with learning disabilities in Nigeria. This underscores the need to examine the contribution of metacognitive awareness of (before, during and after) reading strategies to the prediction of reading comprehension achievement among students with learning disabilities.

2. Purpose of the study

The main purpose of the study was to examine the influence of metacognitive awareness of (before, during and after) reading strategies on reading comprehension achievement among secondary school students with learning disabilities in Ibadan, Nigeria. Specifically, this study examined the:

1. Joint contribution of the metacognitive awareness of (before, during and after) reading strategies to reading comprehension achievement among students with learning disabilities.
2. Relative contribution of the metacognitive awareness of (before, during and after) reading strategies to reading comprehension achievement among students with learning disabilities

3. Research Questions

Two research questions were raised and answered in the study.

1. What is the joint contribution of metacognitive awareness of (before, during and after) reading strategies to the reading comprehension achievement of students with learning disabilities?
2. What is the relative contribution of metacognitive awareness of (before, during and after) reading strategies to the prediction of reading comprehension achievement among students with learning disabilities?

4. Methodology

This study adopted a descriptive research design. There was no manipulation of variables because all the variables already existed. The respondents in this study were one hundred (100) students with learning disabilities from nine senior secondary schools in Ibadan Metropolis, Oyo State. Multi-stage sampling procedure was used in the selection of the respondents. First, the simple random sampling technique was used to select three out of the five local government areas in Ibadan Metropolis, Oyo State. Next, three schools were chosen randomly from each of the three local government areas to give a total of nine schools. This was followed by a purposive selection of respondents from the schools based on the presence of learning disabilities. The respondents were Senior Secondary Class 1 (SS1) students with learning disabilities. Identification of students with learning disabilities was done by screening SSI students from the nine selected schools for the presence of learning disabilities. To screen SS1 students for learning disabilities, an adapted version of the Screening Checklist for Suspected Learning Disabilities (SCSLD) was used. The respondents were male (44) and female (56) students, within the ages of 11 and 20 years.

The following instruments were used for data collection: (i) Academic Records, (ii) Screening Checklist for Suspected Learning Disabilities (SCSLD, adapted), (iii) English Language Achievement Test, (iv) Metacognitive Awareness of Reading Strategies Questionnaire (MARSQ), and (v) Reading Comprehension Test (RCT).

(i) Academic Records: Past school records were utilized by SS1 class teachers to nominate low achievers in each of the selected nine schools. This nomination was based on students who are slow in learning or who perform poorly in academics especially in reading based on the school records. (ii) Screening Checklist for Suspected Learning Disabilities (SCSLD): An adapted version of SCSLD designed by Herriot (2004) was used to identify students with learning disabilities in the selected schools. The instrument consists of items on core areas of learning which include: Reading (questions 1-11), written language (questions 12-24), oral language (questions 25-31), mathematics (questions 32-39), social (questions 40-52), executive functions (questions 53-66), language processing (questions 67-72), perceptual motor (questions 73-79), and phonological awareness (questions 80-83). The questions were rated as "Never, Almost Never, Sometimes, Often and All the Time". High scores signify the presence of learning disabilities.

English Language Achievement Test: This instrument was designed to assess English language achievement of the students. It has a total number of 25 questions, which comprise: English Register (10 questions), Fill in the gaps (5 questions) and spellings (10 questions). This instrument was used in the identification of students with learning disabilities and to further authenticate information obtained from the SCSLD earlier administered to the respondents.

Metacognitive Awareness of Reading Strategies Questionnaire: This instrument was adapted from Metacognitive Awareness of Reading Strategies Inventory (MARS) designed by Mokhtari and Reichard (2002). It consists of 30 items that measure metacognitive awareness of reading strategy (MARS), while reading academic or school-related materials. Mokhtari and Reichard (2002) stated that the major purpose of this inventory was "to assess the degree to which students are aware or unaware of the various processes involved in reading." The researchers modified some items in the original instrument to suit the purpose of the present study. The questionnaire consists of four sections namely, Section A, B, C, and D containing items on demographic information of the respondents, metacognitive awareness of before reading strategies, metacognitive awareness of during reading strategies, and metacognitive awareness of after reading strategies respectively. The questionnaire was designed after the Likert modified four-point type scale with response options of Strongly Agree (SA) =4, Agree (A) =3, Disagree (D) =2, Strongly Disagree (SD) = 1. The instrument has a high reliability of 0.71 for before reading strategies, 0.70 for during reading strategies, 0.76 for after reading strategies scales.

Reading Comprehension Test (RCT): This instrument comprises two reading passages with a total of 15 questions. The first passage has 10 questions, while the second has five (5) questions. The RCT was designed to test respondents' reading comprehension achievement and to examine the metacognitive awareness of reading strategies utilized by them within the reading process.

The respondents' use of (before, during and after) reading strategies was observed by the researchers as the students read the two passages. This was necessary, because to assess student's metacognitive awareness, there is need to observe the students when they are reading a text and find out the metacognitive (before, during, and after) reading strategies utilized in the reading process. After students had completed reading the passages, they answered comprehension questions on the passages as well as questions addressing their metacognitive awareness as reflected on the MARSQ administered to them.

Frequency counts and percentages were used to analyze the demographic data, while multiple regression analysis was adopted to analyze the joint and relative contributions of the independent variables to the dependent variable in the study.

3. Results and Discussion

3.1 Research Question 1

What is the joint contribution of metacognitive awareness of (before, during and after) reading strategies to the reading comprehension achievement of students with learning disabilities?

Table 1: Multiple regression analysis showing joint contribution of the independent variables to reading comprehension of students with learning disabilities

R	R Square	Adjusted R Square	Std. Error of the Estimate			
0.318	0.101	0.073	20.21072			
ANOVA						
Model	Sum of Squares	DF	Mean Square	F	Sig.	Remark
Regression	4419.330	3	1473.110	3.61	0.016	Sig.
Residual	39213.420	96	408.473			
Total	43632.750	99				

Table 2 shows the joint contributions of the three independent variables (metacognitive awareness of before, during and after reading strategies) to the prediction of the dependent variable (reading comprehension achievement). The table also shows a coefficient of multiple correlation ($R = .318$ and a multiple R^2 of $.101$). This means that 10.1% of the variance was accounted for by the three predictor variables when taken together. The significance of the joint contribution was tested at $\alpha = 0.05$. The table also shows that the analysis of variance for the regression yielded ($F_{(3,96)} = 3.61$; $R^2=0.101$) significant at 0.05 level. This implies that the joint contribution of the independent variables to the dependent variable was significant and that other variables not included in this model may have accounted for the remaining variance.

3.2 Research Question 2

What is the relative contribution of metacognitive awareness of (before, during and after) reading strategies to the prediction of reading comprehension achievement among students with learning disabilities?

Table 2: Multiple regression analysis showing relative contribution of the independent variables to reading comprehension of students with learning disabilities

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.
	B	Std. Error	Beta Contribution		
(Constant)	29.363	15.632		1.878	.063
MARS: Before reading	1.434	.854	.247	1.68	.096
MARS: During reading	-.785	.770	-.168	-1.02	.310
MARS: After reading	.995	.653	.232	1.53	.130

Key: Metacognitive Awareness of Reading Strategies=MARS

Table 3 reveals the relative contribution of the three independent variables (metacognitive awareness of before, during and after reading strategies) to the dependent variable (reading comprehension achievement), expressed as beta weights, that is: metacognitive awareness of before reading ($\beta = 0.247$, $t = 1.68$, $p > .05$), during reading ($\beta = -0.168$, $t = -1.02$, $p > .05$), and after reading ($\beta = 0.232$, $t = 1.53$, $p > .05$). Hence, it could be inferred that none of the independent variables that is, the three metacognitive awareness of (before, during and after) reading strategies could independently and significantly predict reading comprehension achievement of students with learning disabilities.

4. Discussion

Findings from this study showed that the joint contribution of independent variables (metacognitive awareness of before, during and after reading strategies) to the dependent variable (reading comprehension achievement) were significant and that other variables not included in this model may have accounted for the remaining variance. This finding supports the findings of Barnett (1988) who reported that there is a significant correlation between perceived strategy use and reading comprehension among students. These findings are consistent with prior research which has shown that awareness and use of reading strategies are positively related to superior reading comprehension and successful learning (Sutiyatno, 2019; Lazarus, 2019; Alexander & Jetton, 2000; Pressley, 2000). Also, Shorey and Mokhtari (2001) found that students' reading ability and achievement were related to their metacognitive awareness and use of reading strategies when reading.

The study also shows that when considered as separate factors, the metacognitive awareness of before, during and after reading strategies are not potentially strong enough to predict reading comprehension achievement of students with learning disabilities. The

present findings show that none of the independent variables (metacognitive awareness of before, during and after reading strategies) could independently and significantly predict reading comprehension achievement of students with learning disabilities. In other words, a reader should always look at the three reading strategies wholistically. In case of acquisition of reading strategies for instance, efforts have to be made to enforce mastery of before, during and after reading strategies for optimal reading comprehension achievement.

As stated by Paris and others (1984), although learners are aware of the strategies, they may not understand the benefits or rules for application of these strategies. It is not enough for the learners to merely know the appropriate reading strategies; they must be capable of successfully applying and monitoring the use of the strategies to develop their reading comprehension (Mokhtari & Reichard, 2002). The present finding is in consonance with the submission of Meniado (2016) that despite the considerable significance of metacognitive awareness of reading strategies to students at the intermediate level grades, there appears to be other factors that do exert some influence on students' reading achievement.

In order to obtain successful reading comprehension achievement, students should be aware of metacognitive (before, during, and after) reading strategies particularly, as factors that work harmoniously and not those that work independent of one another. This is in agreement with the conclusion made by Marzban (2006) and Mokhatari and Sheorey (2008) that metacognitive functions implemented by readers contribute greatly to their learning. In this instance, it is found that students' metacognitive awareness of before, during and after reading strategies when taken together, significantly contribute to reading comprehension achievement of students with learning disabilities.

Based on the findings of the study, the following recommendations are made:

1. Teachers should ensure that students with learning disabilities become fully aware and utilize metacognitive (before, during and after) reading strategies. Students should be trained on how to use multiple metacognitive reading strategies (before, during and after reading strategies) when reading.
2. Teachers of students with learning disabilities should infuse the three reading strategies into the lessons taught in their classrooms. This will help the students learn reading comprehension materials more efficiently, plan, monitor, evaluate, revise and generalize skills learnt.
3. During individual, small group and whole class instructional activities, more emphasis should be placed on the significance of utilizing diverse metacognitive reading strategies rather than focus on isolated use of independent strategies.

4. Teachers should allow students to study using metacognition. This will enable them to gain awareness about what they read and control over how they think, monitor, evaluate and regulate their learning activities.
5. Government and school heads can organize conferences, seminars, or mandatory professional development programme which will help expose teachers and parents to the concept of metacognition especially, with respect to its benefits in reading comprehension among students with learning disabilities.

5. Conclusion

The study investigated the predicting potency of three independent variables, namely, metacognitive awareness of before, during and after reading strategies on the dependent variable (reading comprehension achievement) among students with learning disabilities in Ibadan, Nigeria. From the study, it could be concluded that metacognitive awareness of before, during and after reading strategies, have joint contribution to the reading comprehension achievement of students with learning disabilities. On the other hand, the researchers found that metacognitive awareness of each reading strategy that is, before, during and after reading strategies does not relatively influence the achievement in reading comprehension of students with learning disabilities. So, teachers and their students with learning disabilities should take cognizance of and utilize wholistically before, during, and after reading strategies to enable the students achieve maximally in reading comprehension. If a student with learning disabilities wants to improve his or her reading comprehension achievement, he should pay attention to before, during, and after reading strategies and not just focus on one or two of the reading strategies.

References

- Alexander P.A. & Jetton T.L. (2000). *Learning from text: A multidimensional and developmental perspective*. In M. Kamil, P. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of Reading Research*, 3, pp. 285–310, Mahwah, NJ: Erlbaum.
- Baker, L. (2008). Metacognitive development in reading: Contributors and consequences. In K. Mokhtari, & R. Sheorey (Eds.), *Reading strategies of first and second language learners* (pp. 25-43). Norwood, MA: Christopher Gordon Publishers, Inc.
- Baker L. & Brown A. L. (1984). Metacognitive skills and reading. In P. D. Pearson (Ed.), *Handbook of Reading Research* (pp. 353–394). New York, NY: Longman.
- Barnett, M.A. (1988): Reading through context: How real and perceived strategy affects L2 comprehension. *The Modern Language Journal*, 72(2), 150-162.
- Boulware-Gooden, R., Carreker, S., Thornhill, A., & Joshi, R. M. (2007). Instruction of metacognitive strategies enhances reading comprehension and vocabulary achievement of third-grade students. *The Reading Teacher*, 61(1), 70-77.

- Brown, A. L., Armbruster, B. B., & Baker, L. (1986). The role of metacognition in reading and studying. *Reading Comprehension: From Research to Practice*, 49-75.
- Fitrisia, D., Tan, K. E., & Yusuf, Y. Q. (2015). Investigating metacognitive awareness of reading strategies to strengthen students' performance in reading comprehension. *Asia Pacific Journal of Educators and Education*, 30(1), 15-30.
- Flavell, J. (1976). Metacognitive aspects of problem solving. In L. B. Resnick (Ed.), *The nature of intelligence* (pp. 231-236). Hillsdale, NJ: Erlbaum.
- Flavell, J.H. (1978) Metacognitive Development, in J.M. Scandura & C.J. Brainerd (Eds) *Structural/Process Theories of Complex Human Behaviour*, pp. 34-78. Alphenaan den Rijn:Sijthoff & Noorddhoff.
- Grabe, W., & Stoller, F.L. (2002). Research on teaching reading. *Annual Review of Applied Linguistics*, 24, 44-69. Retrieved from <https://www.cambridge.org/core/journals/annualreview-of-applied-linguistics>
- Herriot, C. (2004). Screening Checklist for Suspected Learning Disabilities - Profile Sheet, University of Guelph, Guelph, Ontario. Available at http://froshability.com/images/Conestoga_Learning_Disability_Screener.pdf
- Kazi, A. S., Moghal, S., & Asad, Z. (2020). Metacognitive Awareness of Reading Strategies for Academic Materials: A Study of Undergraduate Students in Pakistan. *Global Social Sciences Review*, V(1), 44-51. doi:10.31703/gssr.2020(V-1).05
- Lazarus, K.U. (2019). Comprehension Monitoring Strategies as Determinants of Achievement in Reading Comprehension of Secondary School Students with Learning Disabilities in Ibadan, Oyo State. *African Journal of Theory and Practice of Educational Research*, 6, 21-33.
- Marzban, A. (2006). *The interdependence between the process and the product of reading in English and Persian*. Paper presented at LSP international conference, Johor, Malaysia.
- Meniado, J. C. (2016). Metacognitive Reading Strategies, Motivation, and Reading Comprehension Performance of Saudi EFL Students. *English Language Teaching*, 9(3), 117-129.
- Miller, G. (2017). Metacognitive Awareness and Reading Strategy use: Investigating the Intermediate Level ESL Students' Awareness of Metacognitive Reading Strategies. *Culminating Projects in English*. 115. https://repository.stcloudstate.edu/engl_etds/115
- Mokhtari, K., & Reichard, C. A. (2002). Assessing students' metacognitive awareness of reading strategies. *Journal of Educational Psychology*, 94(2), 249.
- Mokhtari, K., & Sheorey, R. (2008). *Reading strategy of first and second language learners*. Norwood 9A: Christopher Gordon Publishers, Inc.

- Palincsar, A. S., & Brown, A. L. (1984). Reciprocal teaching of comprehension fostering and comprehension monitoring activities. *Cognition and Instruction*, 1(2), 117–175.
- Pang, J. (2008). Research on good and poor reader characteristics: implications for reading research in China. *Reading in a Foreign Language*, 20(1), 1–18.
- Pressley, M. (2000). What should comprehension instruction be the instruction of? *Handbook of Reading Research*, 525-544.
- Pressley, M., & Afflerbach, P. (1995). *Verbal protocols of reading: The nature of constructively responsive reading*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Pressley, M., Wharton-McDonald, R., Mistretta-Hampston, J., & Echevarria, M. (1998). The Nature of Literacy Instruction in Ten Grade-4/5 Classrooms in Upstate New York. *Scientific Studies of Reading*, 2, 159–194.
- Salataci, R., & Akyel, A. (2002). Possible effects of strategy instruction on L1 and L2 reading. *Reading in a Foreign Language*, 14(1), 1-17.
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19(4), 460-475.
- Sheorey, R., & Mokhtari, K. (2001). Differing perceptions of reading strategy use between native and non-native college students. In R. Sheorey, K. Mokhtari, & R. S. KouiderMokhtari (Eds.), *Reading Strategies of First and Second Language Learners*. Norwood, MA: Christopher-Gordon Publishers, Inc.
- Sutiyatno, S. (2019). A survey study: The correlation between metacognitive strategies and reading achievement. *Theory and Practice in Language Studies*, 9(4).
- Swanson, H.L., Kehler, P., & Jerman, O. (2010). Working memory, strategy knowledge, and strategy instruction in children with reading disabilities. *Journal of Learning Disabilities*, 43, 24-47.
- Zhang, L. (2013). Metacognitive strategy use and academic reading achievement: Insights from a Chinese context. *Foreign Language Teaching*, 10(1), 54-69.