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Impacts of meta cognitive reading strategies on English language students' reading comprehension

Puok Kawich*
Ph.D. Candidate, Wollo University and Gambella University, Ethiopia
Dawit Amogne (Ph.D)
Associate Professor, Addis Ababa University, Ethiopia
Abiy Yigzaw (Ph.D.)
Professor, Bahir Dar University, Ethiopia
**Corresponding author: pkawich@gmail.com*

Abstract

This study investigated the effect of metacognitive reading strategies on students' reading comprehension performance in English as a Foreign Language (EFL) context at Gambella University. The research focused on one section of English Language and Literature students enrolled in the Reading Skills II course. A total of 36 participants were selected through a random sampling technique and assigned to either an experimental group (n = 18) or a control group (n = 18). The experimental group received explicit instruction in metacognitive reading strategies using the Cognitive Academic Language Learning Approach (CALLA), while the control group was taught through conventional reading instruction methods. A pre-test was administered to determine learners' initial reading comprehension levels, followed by three subsequent tests designed to measure progress. Data were analyzed using MANOVA. The results revealed that the experimental group significantly outperformed the control group across all assessments. Strong positive correlations were found among the three tests (r = 0.767 between Test 1 and Test 2; r = 0.777 between Test 1 and Test 3; and r = 0.780 between Test 2 and Test 3), suggesting that the tests measured related constructs and that improved performance on one assessment predicted success on others. Additionally, the statistically significant Wilks' Lambda value and the large effect sizes indicated that the metacognitive strategy training had a substantial impact on students' reading comprehension. Overall, the findings demonstrate that metacognitive reading strategies enhance learners' comprehension and strategic awareness. It is therefore recommended that EFL reading instruction incorporate metacognitive strategy training to promote more effective and autonomous learning.

Keywords: Reading Strategies, Meta-cognitive Reading strategies, Reading Comprehension, English as a Foreign Language

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Introduction

The existence of language permits human beings to behave with a degree of purposefulness, perseverance, and consistency unknown among the other mammals. However, where there is no language, behavior is nonhuman because for language makes it possible for humans to build up the social heritage of accumulated skills, knowledge, and wisdom. That is it is possible for us to profit by the experiences of past generations, as though they were our own. This is to say that language is used by human beings for communication and experiences sharing. In this way, among the various languages spoken around the world, English rise to prominence as lingua franca reflects unprecedented global dimensions and also widely accepted and used for academic purposes. In this context, having a thorough understanding of all English language skills—major and minor—is essential for improving academic achievement. For example, four skills (speaking, writing, reading and listening) activities in the language classroom serve many valuable purposes: they give learners scaffold support, opportunities to create, contexts in which to use the language for exchanges of real information, evidence of their own ability (proof of learning), and most important confidence.

Among these four major skills, reading is an element for academic purpose because learners' ability to read is a key to their academic success (Dabarera et al., 2014). In addition to this, reading comprehension is a key point that needs to be considered for academic purposes. Gunn pointed out the importance of the ability to read and comprehend a text as a well-recognized goal of teaching practice (2007). A common concept of comprehension for teachers might be that comprehension is a process in which readers construct meaning by interacting with the text through the combination of prior knowledge and previous experience, the information in the text, and the stance the reader takes in relationship to the text (Pardo, 2004).

Reading strategies are used to make reading comprehension easier. O' Malley and Chamot (1990) described three types of reading strategies as follows: *metacognitive* strategies, *cognitive* strategies and *social affective* strategies. In this case, Hartman (2001) justified the importance of the metacognitive reading strategy in reading comprehension in that reading a lesson that involves the metacognitive strategies of self-questioning, summarizing, comprehension monitoring, clarification, and prediction is more effective for improving comprehension than teaching that does not explicitly teach these skills. Channa et al., (2015) put it that when designing reading comprehension material, and syllabus based on planning, monitoring, and evaluating strategies for students to develop reading skills for better comprehension of the text as per their needs, metacognitive reading strategies need to be considered (Marzuki et

al., 2018) indicated that paying attention to reading material, finding out about language learning, organizing, setting goals and objectives, identifying the purpose of a language task, planning for a language task, pursuing practice opportunities, self-monitoring, and self-evaluation are all examples of metacognitive strategies. The significances of metacognitive reading strategies are discussed in this condition as they lead to an essential form of reading for comprehension.

On the other hand, Norman (2020) noted that while researchers emphasize the value of metacognitive reading practices, they are not always beneficial. This is because of the three factors that show some of its negative parts. The first factor is that the metacognitive judgments or feelings including a negative self-evaluation may be detrimental to psychological well-being, Next to this is that the costs of using metacognitive methods may outweigh the benefits; and finally, metacognitive tactics may actively interfere with task performance.

In this case, when observing the benefits of utilizing metacognitive reading strategies and some of its negative parts, it could be pointed out that the benefits of utilizing metacognitive reading strategies exceeded the disadvantages, notwithstanding the Norman(2020)'s assessment that they are ineffective.

At Gambella University, students are taught to learn reading in a variety of ways. However, most of the time teachers teach reading in conventional ways. They encourage students to read the text by getting them into the text either to get a general idea or to get specific information from the text. They need students to be familiar with the skills such as loud reading, silent reading, intensive, scanning, skimming, critical reading, etc. Their key goal is to ensure that students understand the text's ideas. They allow students to skim the text because they want them to get a general idea of what is going on in the text. On the other hand, they urged students to scan the text since they need students to extract relevant details from the text. Yusuf et al. (2017) indicated that skimming and scanning increase students' reading comprehension. Skimming and scanning are useful reading techniques in this context because they enable us to quickly locate information in a text. To aid in the management of these activities, skimming is used to predict and scanning is used to find relevant information from the text. Even though, Yusuf indicated it in that way, still, they do not do reading comprehension well. According to Mariam (2016), metacognitive reading strategies help students to develop their skimming and scanning reading comprehension. In this case, students' abilities could be improved and they could build a capacity to track and assess their learning if metacognitive strategies are used in the ways teachers teach reading. This is a crucial subject in this study since it introduced the idea that EFL students need to be conscious of and regulate their learning styles during EFL class reading activities.

Some difficulties or factors obstruct students' reading comprehension. According to Gilakjani and Sabouri (2016), students struggle with reading comprehension due to a variety of factors. These include the ambiguity of the texts which is affected by the readers' language intensity and fluency as well as their understanding of its application and various meanings. The other problems are the effects of the learners' surrounding on their ability to read a passage; the anxiety that comes with reading comprehension such as exams, classwork, and homework conditions place a greater strain on readers' reading than reading for pleasure. The other element is motivation and interest; and the factor that has to do with word recognition or decoding speed. Readers who have trouble decoding and remembering words read more slowly and have a harder time understanding what they are reading than those who do not. Last but not least put it that there are medical issues that are not treated until the child is older (Pourhosein & Sabouri, 2016). Therefore, these difficulties can be overcome by using strategies that integrate them into effective reading comprehension instruction.

In Ethiopia, students faced difficulties in reading comprehension. According to Ayalew (2017), a plethora of research on the proficiency of students' reading results shows that the standard of reading declined from time to time in Ethiopia, regardless of students' educational level. He went on to say that in the Ethiopia context, research conducted to evaluate students' reading difficulties among university students revealed that students reading abilities were found to be below what was predicted. The findings of these studies showed that there is proof of the reading comprehension problem in the Ethiopian EFL context, but the sources of the problems may be enormous. The following are Ayalew's reasons: most EFL teachers' activities to trigger students' background information about the reading topics have not been given much emphasis, and teachers' participation in helping students to practice prediction about the reading content and predicting ideas within the text is less, and most of the EFL teachers practice loud reading in the classroom, EFL teachers' play a minor role in assisting students in reasoning out and asking self-questions when reading. Furthermore, EFL teachers' contributions to assisting students in connecting the reading text to their lives and interpreting the text within the contexts are negligible. Besides, EFL teachers' efforts to organize groups, share ideas within groups, and lead them to critical judgment is less. In this regard, the EFL teachers' role in directing, facilitating, and assisting learners in reflecting on and visualizing the reading to infer the implied meaning is undervalued. Similarly, the effort that has been made to encourage students to participate in paraphrasing exercises, summarizing the gist of the text, or assessing the author's craft in the light of the reading context is less.

According to Tesfaye and Desalegn (2019), some factors that students struggle to learn reading comprehension in Ethiopia are lack of contextualizing meanings, lack of motivation, lack of vocabulary and grammar, etc. These challenges can be solved with the correct application of reading comprehension strategies. For three key reasons, metacognition has gotten a lot of attention from language teaching theoreticians and researchers. The first reason is that metacognitive experience helps learners become better thinkers and lifelong learners who can adapt to changing circumstances in a fast-changing world. The second reason is that incorporating metacognitive skills into language teaching help students become more self-directed. The final reason is that successful language learning requires a metacognitive knowledge base (El-Koumy, 2004).

To do the work effectively in academic activities, learners need to read and understand the text. For example, to learn effectively in all subjects like biology, chemistry, history geography, etc. learners need to read and understand the text. In teaching my classes at the university, and when observing teachers in their classrooms, students have difficulty constructing meaning from the written texts. That is, they have a problem with reading comprehension. For instance, when I gave them reading comprehension in the classroom, they faced difficulty in reading comprehension. Moreover, many teachers in the university talk about this problem in that many students have a problem understanding the text. The sources of these difficulties are linked to the previously mentioned global difficulties. For instance, the ambiguity of the texts might be influenced by the readers' proficiency and intensity of language as well as their comprehension of its application and range of interpretations. This might be because of the absence of the instructional principles to be used regarding the promotion of metacognitive strategies use.

Many different practices have been put forward for this problem by considering the research findings that showed the importance of metacognitive knowledge or skills. For example, Tavakoli and Koosha (2016) conducted a study on the effect of explicit metacognitive strategy instruction on reading comprehension and self-efficacy beliefs in Iranian University EFL Students. The study relied on an empirical study that investigated the influence of explicit metacognitive strategy instruction on reading comprehension and self-efficacy in English as a foreign language (EFL) among university students in Iran. The results of the study revealed that students in the experimental group showed greater achievement both in reading comprehension and self-efficacy than students in the control group. This shows the importance of metacognitive reading strategies. In this case, the work of Tavakoli and Koosha emphasized explicit instruction on reading comprehension. That is, it seems that their study mainly focused on explicit instruction when using metacognitive strategies

(2016). The study of Mohseni et al., (2020) examined the differential effect of metacognitive strategy training and critical thinking awareness-raising on EFL learners' reading comprehension of general reading (GR), cause and effect (CE), and argumentative (ARG) texts. The study was conducted to examine the extent to which raising Iranian EFL learners' awareness of critical thinking skills and three sets of metacognitive reading strategies including global, problem-solving, and support may influence the three groups of participants' reading comprehension. The results of the paired sample t-test analyses demonstrated that both MCG and CTG made significant improvements in comprehending GR and ARG texts from the pre-test to the post-test and that both outdid the CG in comprehending GR and ARG post-tests. Concerning CE comprehension, the only significant difference was observed between the MCG and the CG. MC training and CT awareness-raising, as suggested by the findings, can help individuals to process the information adequately and precisely enough to arrive at the right decisions. However, it seem that Shang studied the use of three reading strategies: cognitive, metacognitive, and compensation strategies, their perceived impact on self-efficacy, and the relationships between reading strategy use and perceived self-efficacy on their English reading comprehension. Here, it implied that Shang used to compare the frequency of use of these strategies, their relationships, and the perceived impact on self-efficacy.

Dabarera et al. (2014) conducted a study on the impact of metacognitive strategy instruction on reading comprehension in English as a second language (ESL) among 67 Year-1 secondary students in Singapore. The findings showed that there is a relationship between metacognitive awareness-raising and reading comprehension improvement. Also, metacognitive strategy instruction was found to be effective in increasing metacognitive awareness and was linked to significant reading comprehension gains.

Tang and Moore (1992) researched the effects of cognitive and metacognitive pre-reading activities on the reading comprehension of ESL learners. The finding showed the benefit of training in self-monitoring skills on treatment maintenance, suggesting that the meta-cognitively structured intervention may be the treatment of choice.

At Universitas Negeri Malang, East Java, Deliany and Cahyono (2020) studied the awareness and application of metacognitive reading strategies by EFL university students across gender. Their study examines EFL students' awareness and use of metacognitive strategies for reading among EFL students. The study compared the awareness and application of metacognitive reading strategies between male and female EFL students. The Metacognitive Awareness of Reading Strategy Inventory (MARSI-R inventory), developed by Mokhtari et al. (2018), was used to gather the data. The findings indicated that

every student had a high awareness of metacognitive reading strategies, which is indicative of a high use of these strategies. Therefore, gender plays no role in determining the metacognitive reading strategies awareness and metacognitive reading strategies use.

Bozgun and Can (2023) studied the relationships between metacognitive reading strategies and critical reading self-efficacy, with a focus on the reading motivation mediation process. Their study was about to test the mediation of reading motivation between pre-service teachers' metacognitive reading strategies and critical reading self-efficacy studying at the education faculty of a state university located in a city center in the Central Black Sea Region. The Metacognitive Reading Strategies Scale, the Perception Questionnaire on Critical Reading Skills, the Adult Reading Motivation Inventory, and self-efficacy were used to collect data. The results demonstrated that reading motivation and critical reading self-efficacy are significantly predicted by metacognitive reading strategies.

A study by Razkane et al. (2023) examined how Moroccan eleventh-grade students used metacognitive reading strategies in Arabic (L1) and English (L3) The intention of the study was to determine whether trilingual learners' use of MCRS in an English and Arabic reading comprehension task is associated with any particular outcome, and whether using MCRS in these languages can predict reading comprehension scores in both languages. The Survey of Reading Strategies (SORS) served as the basis for the metacognitive reading strategies questionnaire, which was used to collect data. The usage of MCRS in both languages was significantly correlated, according to the results.

A study on metacognitive strategies for reading English texts of ESL freshmen among Filipino ESL students was carried out by James et al.(2020). An investigation of the use of metacognitive strategies among Filipino ESL freshman taking up the General English Course was conducted using a sequential explanatory design method. The results showed that when reading academic materials written in English, the participants showed a strong metacognitive awareness of reading processes. Among the different metacognitive strategies for reading, reading to deepen comprehension and underlining to aid in recalling key details from the text were highly used.

Ermias (2018) undertook a study on the effect of students' self-regulated learning on reading comprehension in EFL classrooms. The aim of the study was to determine how the self-regulated learning activities of grade nine students at Selamber Secondary School affected their reading comprehension. Pre-test, post-test, and a questionnaire were the main instruments used in the study to collect data. In line with the study's findings, a significant portion of the

experimental group's participants improved their test scores as a result of special attention paid to them to use the self-regulated learning strategies.

Tadesse (2021) studied how metacognitive reading strategies might be used in EFL classrooms to help students strengthen their reading comprehension. The intention of the study was to look into learners' usage of metacognitive reading strategies and how such strategies affected their learning during reading comprehension. The study's subjects were Bule Hora University's English instructors and their students, particularly freshman students. The data collection methods used in this study included interviews, observations, and questionnaires. The findings of the research showed that students' overall utilization of metacognitive reading strategies differed significantly.

The study of Dabarera et al. (2014), is different from the present study in that the work of Dabarera et al relied on ESL, and used a procedure that is different from the present study. That is, the present study procedure involves the CALLA model which is not found in the study of Dabarera et al.(2014). The present study also focuses on EFL. Their similarity is that both examine the effects of metacognitive reading strategies.

The work of Tang and Moore (1992) also differs from this study in that the work of Tang and Moore relied on the effect of cognitive and metacognitive pre-reading activities on the reading comprehension of ESL learners. That is, their work mainly examines pre-reading activities on reading comprehension in ESL classes. However, the present study examines the effect of using metacognitive reading strategies in all phases of reading activities in EFL classes. Both are similar because they use metacognitive reading strategies in reading lessons.

The work of Deliany and Cahyono (2020) differs from this study in that their work looked the differences between male and female EFL students based on the use of metacognitive reading strategies. However, this study focused on the application of metacognitive reading strategies rather than examining gender disparities among EFL students. The two studies also differ in how they collected data: this study used the CALLA model, while Deliany and Cahyono (2020) used a questionnaire called the Metacognitive Awareness of Reading Strategy Inventory (MARSI-R inventory), which was created by Mokhtari et al. (2018). What unites them is their advocacy for the use of metacognitive strategies for reading at university level.

The work of Bozgun and Can (2023) differs from this study in that their work examined the relationships between metacognitive reading strategies and critical reading self-efficacy, with a focus on the reading motivation mediation process. But this study focused on only on the effects of metacognitive reading strategies. Another difference is that their work used the Adult Reading Motivation Inventory, the Metacognitive Reading Strategies Scale, and the

Perception Questionnaire about Critical Reading Skills, and self-efficacy to collect data. However, this study used CALLA model to collect data. What ties the two studies, in terms of their similarities, is that they both supported the use of metacognitive reading strategies at the university level.

This study differs from that of Razkane et al. (2023) in that it looked specifically the effects of metacognitive reading strategies at university level. Whereas, that of Razkane et al. (2023) looked at how eleventh-grade students use metacognitive reading strategies in Arabic (L1) and English (L3). Their study intended to determine whether there is a relationship between trilingual learners' use of MCRS in an English and Arabic reading comprehension task and whether using MCRS can predict reading comprehension scores in both languages. Another difference is that Razkane et al. (2023) used the metacognitive reading strategies questionnaire based on the Survey of Reading Strategies (SORS) to gather data, whereas this study used the CALLA model to gather data. The fact that they both employed metacognitive reading strategies is what unifies them.

The study of James et al. (2020) is different from this study in that the former investigated the use of metacognitive strategies among ESL freshman taking up the General English Course using a sequential explanatory design method to collect data, whereas the latter examined the effects of using metacognitive reading strategies using CALLA model to collect data. Their main difference is the methods they used to collect data. The work of Ermias (2018), is different from the present study in that the Ermias's work relied on the effect of self-regulated learning on students' reading comprehension in EFL classrooms. The main goal of the study was to ascertain how students self-regulated learning activities impacted their reading comprehension. Here it seems that Ermias was not specific to see the role of metacognitive reading strategies, but he examined it in a broad manner in that he combines the metacognitive issues with the issues of self-regulation. That is the self-regulated learning. However, the present study focused on the effects of metacognitive reading strategies use on students' reading comprehension performance. Another difference is that while the main tools employed in the Ermias's study to gather data were a pre-test, post-test, and a questionnaire, in the present study the CALLA model was used.

The study of Tadesse (2021) is different from the present study in that the Tadesse (2021's study target group were both English instructors and their students, whereas the present study targeted only English and literature department students. They differs also from the ways they collected the data in that the Tadesse (2021)'s study used, observations, and questionnaires, whereas the present study used the CALLA model, and diaries. Their sameness seen as

they both used interview to collect data, they both targeted freshman students and their use of metacognitive reading straregies in students reading comprehension.

Therefore, the purpose of this study is to examine whether the use of metacognitive reading strategies could have positive effects on students' reading comprehension performance, in EFL classes at Gambella University. Investigating this area may contribute to the improvement of students' reading comprehension performance and to the Ethiopia's English curriculum, particularly for university-level courses. Furthermore it may be notable to pave the way for the one that followed.

In this case, this study is intended to answer the following research questions.

Q1: Is there a difference between those who were trained to apply metacognitive strategies and the control group in their reading performance?

Q2: what are the impacts of metacognitive reading strategies on students' reading comprehension performance?

Empirical Studies

Metacognitive strategy training should be incorporated into reading teaching by EFL teachers. To apply the metacognitive strategies, teacher should give the students systematic instruction about the concept of metacognition and learning strategies. This will help the students comprehend the new strategies better and know how to apply them to different reading tasks. Researchers suggested that teaching readers the metacognitive process will help them become more capable, strategic and active comprehends as well as increase their metacognitive knowledge, monitoring, and control over all texts. Without knowledge and experience, the process cannot happen on its own. The expectation is that readers will understand the content they are reading, so they must use techniques to help them do so (Muhid et al., 2020). In this manner, Learners' reading comprehension improves as they use metacognitive reading strategies (planning, elf-questioning, summarizing, comprehension monitoring, clarification, and prediction etc.).

Theoretical framework

This study is based on Albert Bandura's social cognitive theory, which was developed in 1986. Bandura emphasized the significance of self-beliefs at the outset of the theory. Bandura pioneered a theory of human functioning with the production of Social Foundations of Thought and Action: A Social Cognitive Theory, which assigns a prominent role to cognitive reflexive, self-regulatory,

and self-reflective processes in human adaptation and transformations. Instead of reactive organisms formed and guided by environmental factors or propelled by hidden inner urges, people are seen as proactive, self-organizing, self-reflecting, and self-regulating entities. According to this theoretical viewpoint, human functioning is seen as the result of a dynamic interplay of environmental, behavioral, and personal factors. For instance, how people interpret the outcomes of their own activity affects their environments and personal characteristics, which in turn, affect how their following actions are informed and altered. Here, Bandura highlights how vital cognition is to people's abilities to create reality, self-regulate, encode information, and carry out actions (Pajares, 2002). The primary purpose of this study is to investigate students' self- learning to create their own learning activities, engage in self-monitoring, and self-evaluate their process. This is in line with Albert Bandura's social cognitive theory.

Variables of the Study

The definition of an operational variable provides information on the variables that will be utilized in this study. In this study, there are two factors. They are independent and dependent variables.

Independent Variable

The primary variable that is intended to be investigated is the independent variable. It is the variable that the writer chooses, adjusts, and measures. The metacognitive reading strategy which may be characterized as a strategy that can make it simpler for students to study reading comprehension in the classroom is an independent variable in this study. The grouping independent variables are shown in figure below as metacognitive knowledge or awareness and metacognitive regulation or control.

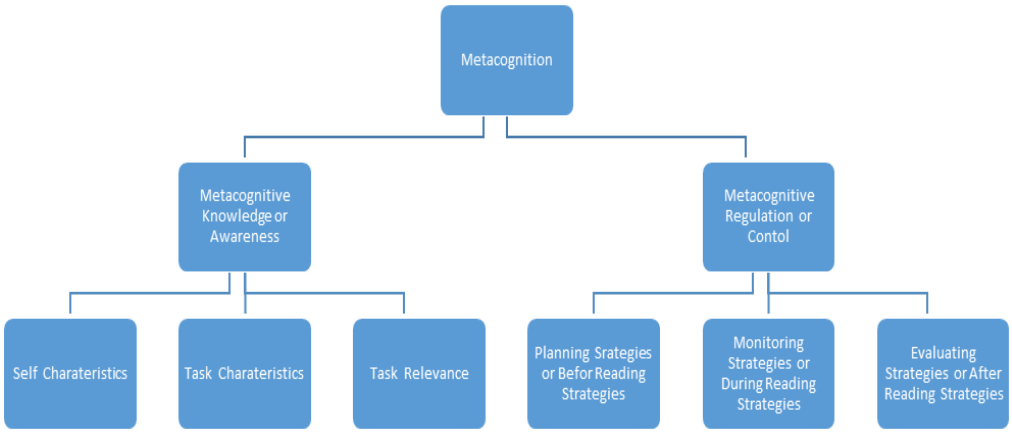


Figure 1: Grouping independent variables

In the figure 1 above, indicated that student used the metacognitive knowledge to be aware of the task and used metacognitive regulation to control (plan, monitor and evaluate) their learning.

The students who use the metacognitive reading strategies:

- interested in reading comprehension.
- increased their understanding of what they read.
- are more at ease with understanding what they read.

Dependent Variable

The observed variable is the dependent variable. Reading comprehension is the research's dependent variable. After employing metacognitive reading strategies, students' reading comprehension might start to improve. The dependent variable was assessed using written exam questions with a range of scores from 0 to 100. The ability to read and comprehend well is a success indicator.

The indicator of success in reading comprehension abilities are.

- The students can pinpoint the text's major concept.
- The students can pinpoint the text's aim.
- The students can determine the sentence's meaning.
- The students can plan, practice, monitor, and evaluate their reading comprehension.

The first research question will be tested using both the independent and dependent variables

Methods

The study's target group was second year English language department students at Gambella University. These university students were preferred for this study because they were considered to be in charge of their learning when compared to other colleges and high school students. Moreover, university students were confronted with a variety of reading techniques or strategies. For example, they learned reading by using a variety of reading strategies from grade one to grade twelve and even during their first year class at the University. Based on their way of learning using all of this variety of reading strategies, they were supposed to be participants of this study. As metacognitive reading strategies are new to them, they encountered the difficulties in their way of learning. However, they had better understanding of how to put them into effect.

The maximum number of students in one section was 36. I used a simple random sampling and technique which is the lottery method to assign both groups. The simple random technique was used because it lets all the sampling population gets an equal chance to participate in the study. As a result, eighteen student were categorized to be an experimental group where as other eighteen group were categorized to be a control group. The new strategies training was provided to the experimental group (i.e. the teaching of reading through metacognitive reading strategies). However, the other group (control) was taught reading using the conventional method.

Data Collection instruments

To test the effect of metacognitive reading strategies on students' reading comprehension performance in EFL class, four types of tests were used. These are pre- test, first test, second test and third (post-test) test. In this study, time series was used. Time-series designs provide insight into the time course of language development by collecting the data on several occasions, including changes that may be immediate (Rogers & Révész, 2020). In other words, students were given a series of tests, including pretest and post-test. In this way, before the strategies testing, the control and experimental group were given a pretest to determine their previous knowledge of reading comprehension. Students were informed to offer their answers during the pretest stage without any fear and without being perceived that there will be negative consequences. After the pretest, both groups were given two series of tests before the post-test. The pretest, the two series of tests, and the post-test were designed on reading contents. These tests were subjective and objective (multiple choices) in nature

because it was hoped that they can enable students to express their opinions. I facilitated the classroom situation during the tests. The two tests and the post-test were provided to both classes to see how much the students have progressed in their reading activities as a result of the new reading strategies. Generally, these three tests in this study were given to students to see the difference between those who were trained by applying the metacognitive reading strategies and the control group in their reading performance

I designed reading material based on the reading skills II course, and mainly guided students in three themes. These include Future of Technology in Education, the Atomosphere, and the Effect of Eating Chocolate by Dogs and Cats.

The students attended English classes for about 180 minutes per week in a semester at the University. The experimental group was instructed in a strategies-based manner during the treatment periods. I followed the CALLA Model adopted from Chamot and O'Malley's (1987) strategy instruction that has five phases: Preparation, Presentation, Practice, Evaluation, and Follow-Up Expansion.

Stage 1. Preparation. I gave advanced issues about the lesson and let students identify what they already know about the topic. The teacher also used elaboration as a strategy. That is, he elaborated on the necessary points to the students in that he talked about the importance of metacognitive reading strategies and provided a handout that includes different metacognitive strategies.

Stage 2. Presentation. I presented the new information to students by using techniques that let them understand the issues. I encouraged students to use self-monitoring, strategy inference, summarizing, transferring and predicting, etc. in reading comprehension. I taught the learners about how the strategy is used, how it is applied, why it is important, and when to apply it to the specific task at hand.

Stage 3. Practice. I let students engage in activities in which they could apply learning strategies in that they were in cooperative small groups during the sessions. While they were in cooperative small groups in this phase, the teacher encouraged the use of strategies such as deduction, inference, questioning for clarification, summarizing, etc. in reading comprehension. Here the main issue was to integrate strategy instruction into the regular classwork so that the students could make a connection between the new strategies and real-life tasks and activities that they must accomplish.

Stage 4. Evaluation. In this phase, I let students reflect on their learning and plan to give solutions to any challenges they may have identified. And I

gave them activities such as debriefing discussions, self-checklists, and open-ended questionnaires so that students could develop self-evaluation insights.

Stage 5. Follow-up expansion. I encouraged students to relate and apply the new information to their own lives in that they considered the knowledge of their parents and other family members in a way that let them compare what they have learned in school with their own cultural experiences. In other words, I encouraged students to transfer the most effective strategies that they found to new contexts and to develop their combinations and interpretations of metacognitive learning strategies (Chamot & O'Malle, 1987).

Data Analysis Techniques

In this study, quantitative data analysis was applied. **MANOVA** was chosen because there are multiple dependent variables (Test 1, Test 2, Test 3) and one independent variable (Group: Control vs Experimental). MANOVA checks whether there is a statistically significant difference between the groups across multiple dependent variables at once. In this case, experimental group means were consistently higher across all tests (especially Test 1, 2, and 3), suggesting the experimental group improved significantly more than the control group.

For MANOVA, the key assumptions are:

Independence of observations – Scores of one student does not affect another.

Multivariate normality – The dependent variables (Test scores) are normally distributed within each group.

Homogeneity of covariance matrices – The variance–covariance structure is equal across groups (tested with Box's M test).

Absence of multicollinearity – The dependent variables should not be too highly correlated (though some correlation is expected).

Measurement scale: The test scores (Pre-test, Test 1, Test 2, Test 3) are interval/ratio scale data because they are numerical, continuous, and allow meaningful comparison of means and standard deviations.

Sample size: Control group (Normal Group) = 18

Experimental group = 18

Total sample size = 36

Normality: For MANOVA, each group's test scores are assumed to follow a multivariate normal distribution. Here, based on means and standard deviations given, we assume normality holds (normally tested using Shapiro–Wilk or Kolmogorov–Smirnov test).

Homogeneity of variance: MANOVA also assumes that the variances (and covariances) are equal across groups. This is usually tested with Levene's Test or Box's M Test. For your assignment, you can state: "Homogeneity of variance is assumed since MANOVA requires equality of covariance matrices across groups."

Validity

Validity is a measure of how well a measuring tool fulfills its purpose and relates to whether the tool assesses the behavior or quality that it is designed to measure. It is defined concerning the analysis resultant meaningful and proper interpretation of the data collected from the measuring device (Sürücü, & Maslakç, 2020)

The tests in this regard fulfilled the content validity because the materials of these tests were taken from the topics in English courses of the University students. In this case, the tests represented what they aim to measure. The tests also have construct validity in that they were designed aiming to see the ability of students in students' comprehension of reading text, and the tests exactly measured it.

The scientific justification how you test and check validity of the instrument

Communalities

	Initial	Extraction
The result of first test	1.000	.846
The result of second test	1.000	.848
The result of third test	1.000	.855

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.549	84.981	84.981	2.549	84.981	84.981
2	.233	7.775	92.756			
3	.217	7.244	100.000			

Extraction Method: Principal Component Analysis.

The tests appear to have good construct validity because of the high loading on the first component (Test 1). This Test 1 also explained the significant portion of the variation, 84.981%

Reliability

The stability and consistency of the used measuring device over time are referred to as reliability (Ibid).In this case, the researcher prepared a pre-test consisting of multiple choice and subjective approaches. After that, I prepared two tests and a final exam consisting of multiple choices and a subjective approach. In this case, the experimental groups' results revealed93.3333, 78.8889 and 81.6667 consecutively. As a result, given that the scores range from 78 to 93, it is clear from the data that the test is a reliable tool for evaluating EFL readers.

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	36	100.0
	Excluded[a]	0	.0
	Total	36	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.820	4

The tests are reliable because this Cronbach's Alpha is above 0.7

Correlations

		The result of first test	The result of second test	The result of third test
The result of first test	Pearson Correlation	1	.767**	.777**
	Sig. (2-tailed)		.000	.000
	N	36	36	36
The result of second test	Pearson Correlation	.767**	1	.780**
	Sig. (2-tailed)	.000		.000
	N	36	36	36
The result of third test	Pearson Correlation	.777**	.780**	1
	Sig. (2-tailed)	.000	.000	
	N	36	36	36

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

The tests are reliable because the correlations among 3 tests are high.

Both validity and reliability

Component Matrix[a]	
	Component 1
The result of first test	.920
The result of second test	.921
The result of third test	.925
Extraction Method: Principal Component Analysis.	
a. 1 components extracted.	

All in all, the data has high reliability and validity

Results and Discussion

Results

This section tries to analyse the results of the two groups that are displayed and examined by using MANOVA. The two groups are known as the control and experimental groups. There were eighteen students in each group. The results of the students' three tests are indicated in the table below.

Table 1

Results of the Four Tests

	Groups	Mean	Std. Deviation	N
Pre-test	Normal Group	55.5556	8.02366	18
	Experimental Group	54.4444	11.09967	18
	Total	55.0000	9.56183	36
Test 1	Normal Group	72.2222	10.03263	18
	Experimental Group	93.3333	9.07485	18
	Total	82.7778	14.26506	36
Test 2	Normal Group	57.7778	9.11079	18
	Experimental Group	78.8889	6.97802	18
	Total	68.3333	13.36306	36
Test 3	Normal Group	61.1111	6.58777	18
	Experimental Group	81.6667	5.11054	18
	Total	71.3889	11.93381	36

As seen in table 1, for instance, the experimental group performed better on test one than the control group with mean and standard deviation of 93.33±9.07 and 72.22±10.03 scores respectively. In this aspect, there is no disputing the experimental group's success on test one. When we examine test two, the mean and standard deviation were found to be 78.89±6.98 and 57.78±9.11 scores for experimental and control group consecutively which still indicated that the experimental group had a lead over the control group. In the third test, the experimental group revealed higher performance on average with

mean and standard deviation of 81.67±5.11 score compared to the control group with mean and standard deviation of mean and standard deviation of 61.11±6.59 score. This suggested the similar effectiveness of the experimental group.

Considering the overall comparison of the three tests between the two groups in this case, it appeared that the experimental group had overworked the control group on average.

Table 2

Box's Test of Equality of Covariance Matrices

	Box's M	**13.896**
F		2.093
df1		6
df2		8375.547
Sig.		.051

Given that there is substantial difference in the significant value between the two groups, it can be concluded that there is significant value. This is because, as can be seen in table 2 above, the significant value is 051.

The elaboration of tests' results

Pre-test

Control M = 55.5556, SD = 8.02366

Experimental M = 54.4444, SD = 11.09967

Sp=9.6846

SE=3.2282

t=0.3442 with df = 34 → p = **0.733** (two-tailed)

Cohen's d = **0.115**

Interpretation: No significant difference at pretest (groups equivalent before intervention).

Test 1

Control M = 72.2222, SD = 10.0326

Experimental M = 93.3333, SD = 9.07485

Sp=9.5657

SE=3.1886S

t=−6.6209, df = 34 → p ≈ **1.36×10^{-7}** (two-tailed)

Cohen's d = **−2.21** (very large)

Interpretation: Experimental group scored *much higher* than control at Test1; highly significant.

Test 2

Control M = 57.7778, SD = 9.11079
Experimental M = 78.8889, SD = 6.97802
Sp=8.1148s_p = 8.1148sp=8.1148
SE=2.7049SE = 2.7049SE=2.7049
t=−7.804, df = 34 → p ≈ **4.40×10^{-9}**
Cohen's d = **−2.60** (very large)

Interpretation**:** Strong significant difference in favor of experimental group.

Control M = 61.1111, SD = 6.58777
Experimental M = 81.6667, SD = 5.11054
Sp=5.8956
SE=1.9652
t=−10.4598, df = 34 → p ≈ **3.64×10^{-12}**
Cohen's d = **−3.49** (huge effect)

Interpretation: Very strong evidence experimental group performed better.

Table 3

Multivariate Tests

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[c]
Intercept	Pillai's Trace	.995	2054.714[b]	3.000	32.000	.000	.995	6164.142	1.000
	Wilks' Lambda	.005	2054.714[b]	3.000	32.000	.000	.995	6164.142	1.000
	Hotelling's Trace	192.629	2054.714[b]	3.000	32.000	.000	.995	6164.142	1.000
	Roy's Largest Root	192.629	2054.714[b]	3.000	32.000	.000	.995	6164.142	1.000
Groups	Pillai's Trace	.801	42.965[b]	3.000	32.000	.000	.801	128.895	1.000
	Wilks' Lambda	.199	42.965[b]	3.000	32.000	.000	.801	128.895	1.000
	Hotelling's Trace	4.028	42.965[b]	3.000	32.000	.000	.801	128.895	1.000
	Roy's Largest	4.028	42.965[b]	3.000	32.000	.000	.801	128.895	1.000

	Root

a. Design: Intercept + Groups
b. Exact statistic
c. Computed using alpha = .05

Wilks' Lambda for Groups: The Wilks' Lambda value for the groups is 199, with a significance (Sig.) value of .000. This indicates a statistically significant difference between the groups (experimental vs. control).
Effect Size: The Partial Eta Squared value of .801 indicates a large effect size, meaning that the metacognitive strategies training has a significant impact on performance. Given the statistically significant Wilks' Lambda value and the large effect size, we can conclude that the metacognitive strategies training is indeed effective. The experimental group outperformed the control group, suggesting that the training had a positive impact on the participants' performance.

Each value for experimental and the control group statistics for each of the analysis sections.

Test 1

Experimental group results= 93.33±9.07. On the other hand control group results = 72.22±10.03

Test 2

Experimental group results =78.89±6.98. On the other hand control group results = 57.78±9.11

Test 3

Experimental group results= 81.67±5.11. On the other hand the control group results = 61.11±6.59

Thresholds typically used in MANOVA/ANOVA:

Significance level (α): 0.05 (5%) is the common threshold.

If *p-value* < *0.05*, reject the null hypothesis (there is a significant difference).

If *p-value* ≥ *0.05*, fail to reject the null (no significant difference).

Therefore in this analysis 0.05 (5%) is the threshold

Table 4
Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared	Noncent. Parameter	Observed Power[d]
Corrected Model	Test 1	4011.111[a]	1	4011.111	43.836	.000	.563	43.836	1.000
	Test 2	4011.111[b]	1	4011.111	60.913	.000	.642	60.913	1.000
	Test 3	3802.778[c]	1	3802.778	109.407	.000	.763	109.407	1.000
Intercept	Test 1	246677.778	1	246677.778	2695.836	.000	.988	2695.836	1.000
	Test 2	168100.000	1	168100.000	2552.784	.000	.987	2552.784	1.000
	Test 3	183469.444	1	183469.444	5278.455	.000	.994	5278.455	1.000
Groups	Test 1	4011.111	1	4011.111	43.836	.000	.563	43.836	1.000
	Test 2	4011.111	1	4011.111	60.913	.000	.642	60.913	1.000
	Test 3	3802.778	1	3802.778	109.407	.000	.763	109.407	1.000
Error	Test 1	3111.111	34	91.503					
	Test 2	2238.889	34	65.850					
	Test 3	1181.778	34	34.758					
Total	Test 1	253800.000	36						
	Test 2	174350.000	36						
	Test 3	188454.000	36						
Corrected Total	Test 1	7122.222	35						
	Test 2	6250.000	35						
	Test 3	4984.556	35						

a. R Squared = .563 (Adjusted R Squared = .550)
b. R Squared = .642 (Adjusted R Squared = .631)
c. R Squared = .763 (Adjusted R Squared = .756)
d. Computed using alpha = .05

Significance (Sig.) Values:

From the above table 4, all tests (Test 1, Test 2, and Test 3) show significance values (Sig.) of .**000**. This is below the conventional alpha level of **.05**, indicating that there are significant differences between the groups for each test.

Effect Size:

The Partial Eta Squared values indicate the effect size as shown below.

Test 1: **.563** suggests a large effect.

Test 2: **.642** also suggests a large effect.

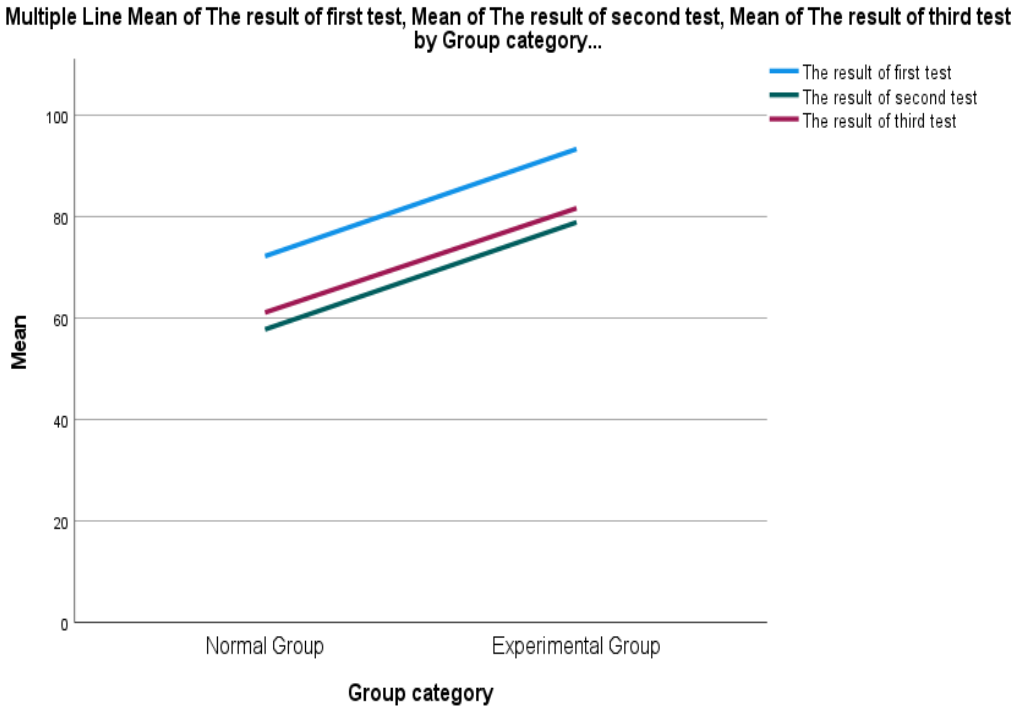
Test 3: **.763** indicates an even larger effect.

In conclusion, the results indicated that there are statistically significant differences between the groups across all three tests, with large to very large effect sizes. For example the effect size of the first test showed **.563** which suggests a large effect, the effect size of the second test showed **.642** which also suggests a large effect and the effect size of the third test showed **.763** that indicates an even larger effect. Therefore, it suggests a strong relationship between the group membership and the dependent variable measured by these tests. Here the majority of the participants of the experimental group had high scores on all three tests, indicating that the group fared better overall.

Discussion

Interpreting the improvement between groups

The more details of this MANOVA (Multivariate Analysis of Variance) graph: 1



Dependent Variables: The graph shows the mean scores for three dependent variables - the "result of first test", "result of second test", and "result of third test".

Group Comparison: The two groups being compared are the Normal Group and the Experimental Group.

Mean Score Trends:

- For both groups, the mean scores increase from the first test to the third test, indicating an improvement in performance over time.
- The Experimental Group consistently has higher mean scores compared to the Normal Group across all three test results.

Group Differences:

- The increasing separation between the lines for the two groups suggests there are significant differences in the test results between the Normal and Experimental groups.

- The Experimental Group appears to have outperformed the Normal Group on all three tests.

Multivariate Analysis:

- MANOVA allows for the simultaneous comparison of multiple dependent variables (the three test results) between the two groups.
- This multivariate approach can provide insights into the overall group differences and the relationships among the test results.

Let's elaboration (look at) the vertical distance between the lines in this MANOVA graph:

The vertical distance represents the differences in the mean scores between the three dependent variables (the result of the first test, second test, and third test) within each group.

For the control Group:

- The vertical distance between the blue, purple, and green lines shows the differences in the mean scores for the first, second, and third test results within the Normal Group.
- This vertical separation indicates that the mean scores increased from the first test to the second test to the third test for the Normal Group.
- The increasing vertical distance suggests that the participants in the Normal Group improved their performance across the three consecutive tests.

For the Experimental Group:

- The vertical distance between the blue, purple, and green lines for the Experimental Group is also increasing.
- This indicates that the mean scores for the Experimental Group improved from the first test to the second test to the third test, similar to the trend observed in the Normal Group.

Comparing the vertical distances between the two groups:

- The vertical separation between the lines is greater for the Experimental Group compared to the Control Group.
- This implies that the Experimental Group had larger increases in their mean scores from one test to the next, compared to the improvements observed in the Normal Group.

In summary, the vertical distances within each group reveal the performance trends over the three tests, while the relative vertical distances between the groups suggest the Experimental Group had more pronounced improvements in their test results compared to the control Group.

Table 5

Correlations Among Tests

		The result of first test	The result of second test	The result of third test
The result of first test	Pearson Correlation	1	**.767****	**.777****
	Sig. (2-tailed)		<.001	<.001
	N	36	36	36
The result of second test	Pearson Correlation	.767**	1	**.780****
	Sig. (2-tailed)	<.001		<.001
	N	36	36	36
The result of third test	Pearson Correlation	.777**	.780**	1
	Sig. (2-tailed)	<.001	<.001	
	N	36	36	36

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

Key Components of this Table

Pearson Correlation Coefficients:

- The values indicate the strength and direction of the linear relationship between each pair of tests.
- Values range from -1 to 1:
  - **1** indicates a perfect positive correlation.
  - **0** indicates no correlation.
  - **1** indicates a perfect negative correlation.

Significance Levels (Sig. (2-tailed)):

- All significant values are less than 0.001, indicating strong statistical significance for the correlations observed.
- The notation ** indicates that these correlations are significant at the 0.01 level.

Sample Size (N):

- The sample size for each correlation is 36, which suggests that the correlations are based on data from 36 observations.

Table 6

Correlation Matrix Summary

	Test 1	Test 2	Test 3
Test 1	1	0.767	0.777
Test 2	0.767	1	0.780
Test 3	0.777	0.780	1

Interpretation of Correlations

Here's an interpretation of the provided MANOVA correlation matrix:

a) Result 1 and Result 2:
   - Correlation coefficient = 0.767
   - This indicates a strong positive correlation between these two tests. As the score on Result 1 increases, the score on Result 2 tends to increase as well.

b) Result 1 and Result 3:
   - Correlation coefficient = 0.777
   - This also indicates a strong positive correlation, suggesting that higher scores on Result 1 are associated with higher scores on Result 3.

c) Result 2 and Result 3:
   - Correlation coefficient = 0.780
   - Similarly, this strong positive correlation indicates that as scores on Result 2 increase, scores on Result 3 also tend to increase.

Overall Interpretation

- All three results are positively correlated with each other, and the correlations are statistically significant.
- The strong correlations suggest that the results from the tests may be measuring related constructs or that performance on one test is indicative of performance on the others.

In conclusion, the metacognitive reading strategy improved the students' reading comprehension performance; the results of this study align with those of earlier research. For instance, Tang and Moore's (1992) article examined the effects of cognitive and metacognitive reading activities on ESL learners' reading comprehension and found that training in self-monitoring skills was beneficial for treatment maintenance, indicating that the meta-cognitively structured intervention may be the appropriate course of action. Another illustration is found in Ermias's (2018) article, which examined the impact of students' self-regulated learning on reading comprehension in EFL classrooms. According to the study's conclusions, a sizable percentage of the experimental group's participants saw an improvement in their test scores as a result of receiving high score on how to apply self-regulated learning strategies. In this instance, it's reasonable to argue that the study's findings supported ideas and earlier research findings.

In this study, the metacognitive reading strategies improved students' reading comprehension performance. However, some previous research findings indicated some gaps of using the metacognitive reading strategies.The inability of the students to check their comprehension in that frequency of their awareness of the metacognitive reading strategies and their lack of concern for checking their comprehension showed that they did not attach value this the metacognitive

reading strategies. Another is lack of lexical resources that is without a good lexical knowledge reading would be very difficult. They tended to solve their problems either by consulting a dictionary or avoiding the difficult points. This indicated that the metacognitive reading strategies could not addressed these challenges. In the same way, Norman (2020) the metacognition can sometimes not be helpful or even outright unhelpful to cognitive achievement. Therefore, we cannot choose to be metacognitive or not. However, we can choose whether to apply certain metacognitive strategies, attend to metacognitive feelings, or reflect upon metacognitive knowledge.

In this study, the metacognitive reading strategies improved students' reading comprehension performance. However, some previous research findings indicated some gaps of using the metacognitive reading strategies. For example, The inability of the students to check their comprehension in that frequency of their awareness of the metacognitive reading strategies and their lack of concern for checking their comprehension showed that they did not attach value this the metacognitive reading strategies. Another is lack of lexical resources that is without a good lexical knowledge reading would be very difficult. They tended to solve their problems either by consulting a dictionary or avoiding the difficult points. This indicated that the metacognitive reading strategies could not addressed these challenges. In the same way, Norman (2020) the metacognition can sometimes not be helpful or even outright unhelpful to cognitive achievement. Therefore, we cannot choose to be metacognitive or not. However, we can choose whether to apply certain metacognitive strategies, attend to metacognitive feelings, or reflect upon metacognitive knowledge.

Summary

The key results from the reading comprehension tests are briefly presented in this subsection. The differences in performance between the experimental group and the control group on the first test indicated that the experimental group performed better on test one than the control group with mean and standard deviation of 93.33±9.07 and 72.22±10.03 scores respectively. In this On the test two, the mean and standard deviation were found to be 78.89±6.98 and 57.78±9.11 scores for experimental and control group consecutively which still indicated that the experimental group had a lead over the control group. In the third test, the experimental group showed higher performance on average with mean and standard deviation of 81.67±5.11 score compared to the control group with mean and standard deviation of mean and standard deviation of 61.11±6.59 score. This implied that the experimental group performed better than the control group.

The Wilks' Lambda value for the groups is 199, with a significance (Sig.) value of .000. This indicates a statistically significant difference between the

groups (experimental vs. control).The Partial Eta Squared value of .801 indicates a large effect size, meaning that the metacognitive strategies training has a significant impact on performance. For both groups, the mean scores increase from the first test to the third test, indicating an improvement in performance over time. The Experimental Group consistently has higher mean scores compared to the Normal Group across all three test results.

All three results are positively correlated with each other, and the correlations are statistically significant. The strong correlations suggest that the results from the tests may be measuring related constructs or that performance on one test is indicative of performance on the others.

In summary, the vertical distances within each group reveal the performance trends over the three tests, while the relative vertical distances between the groups suggested the Experimental Group had more pronounced improvements in their test results compared to the control Group.

Conclusions

In this study, reading materials were provided in context that students practiced the chosen texts actively and purposefully. Meaning, the students were taught reading lesson using the metacognitive reading strategies. As a result, the metacognitive reading practices increased the students' ability to comprehend what they were reading, as was demonstrated in the experimental group. Additionally, when the experiment group used the group's works, it provided opportunities for students to exchange ideas with one another. That means they learn from each other. Furthermore, there were activities for Follow-Up Expansion throughout the experiment. These activities enabled the students to learn well by taking into account the knowledge of their parents and other family members in a way that allowed them to compare what they have learned in school with their own cultural experiences, these allowed students to relate and apply the new information to their own lives.

In conclusion, the metacognitive reading strategy improved the students' reading comprehension performance. Regarding the statistically significant Wilks' Lambda value and the large effect size, we can conclude that the metacognitive strategy training is indeed effective. The experimental group outperformed the control group, suggesting that the training had a positive impact on the participants' performance. The statistically significant differences between the groups across all three tests, with large to very large effect sizes suggests a strong relationship between the group membership and the dependent variable measured by these tests.

Thus, the study came to the conclusion that students learn better in reading lessons in EFL classrooms that include metacognitive reading strategies. This is due to the study's findings, which indicate that students in the experimental

group significantly increased their reading comprehension abilities after implementing the metacognitive reading strategies. Therefore, the metacognitive reading strategies are important for students reading comprehension.

Recommendations

Throughout this study, students' reading comprehension was measured using the metacognitive reading strategies, and it was determined that the application of these strategies increased students' reading comprehension. As a result, the following suggestions are given in light of the research's findings: the metacognitive reading strategies ought to be included in Ethiopia's English curriculum, especially at the university level. Reading comprehension exercises should use metacognitive reading strategies to encourage students to actively and purposefully engage in the reading process. The researcher also highly advises the inclusion of metacognitive reading strategies in other English language communicative skills courses mainly on the sections focus on reading activities, as well as in reading courses, EFL curriculum, instructions and future researches. This may open the door to the metacognitive reading strategies promotion of not just reading skills but also other language skills.

Conflict of interest

The authors declare that there is no conflict of interest.

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