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Enhancing English Reading Comprehension of ESL Underachievers by Fostering Metacognitive Strategies

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***Abstract*—This study investigates the efficacy of implementing metacognitive reading strategies in English classes to enhance the reading comprehension of underachieving Arab second-language learners. The research included a specifically developed lesson in three sixth-grade classes at a Saudi girls' school and a control group of three additional classrooms. Information was gathered through pre-and post-tests, interviews, and observations. The results reveal that students taught metacognitive skills caught up to their more successful classmates regarding reading comprehension. The implications of these methods for English as a Second Language (ESL) instruction are examined. These findings provide valuable insights into the capacity of metacognitive reading strategies to close the comprehension gap among underachieving ESL learners in the Arab context. Based on the findings, the research recommends incorporating these methods into English classes as an effective way to improve student's reading comprehension and overall performance in the classroom.**

***Index Terms*—metacognition, metacognitive strategies, reading comprehension, English as a second language, underachievers**

I. Introduction

Metacognition and reading comprehension

Reading comprehension has always been widely recognized as a fundamental skill for English as a Second Language (ESL) students and is particularly indispensable in academic settings (Grabe & Stoller, 2019; Harmer, 2007; Nunan, 2003). The complexity of reading comprehension in a foreign language, as noted by Ismail and Tawalbeh (2015), stems from numerous factors influencing foreign readers' reading processes and comprehension. These factors include background knowledge, language proficiency in both the native language (L1) and the second language (L2), and metacognitive knowledge (Ismail & Tawalbeh, 2015).

Arab learners, particularly those in the Kingdom of Saudi Arabia (KSA), who primarily speak Arabic as their native language, face numerous challenges when developing their English reading comprehension abilities (Elttayef & Hussein, 2017). One specific challenge faced by Arab learners in KSA, as stated by Alharbi (2022), is the limited exposure to English in their daily lives. The dominance of their native language, Arabic, hampers their language acquisition process, making it harder for them to comprehend English texts effectively. This lack of exposure contributes to the difficulties they experience in reading comprehension. Furthermore, other researchers also have highlighted that despite English being taught as a second language in educational institutions across Arabic-speaking countries, these learners encounter many difficulties, including overall comprehension difficulties, reading fluency, motivation, and retention (Al-Sobhi & Preece, 2018; Alharbi, 2022; Keezhatta & Omar, 2019).

According to the research, students who can monitor, control, and develop self-awareness of their learning processes benefit greatly from metacognition (Sato & Dussuel Lam, 2021; Teng & Zhang, 2021; Zhang & Zhang, 2019; Zhang & Zhang, 2022). Metacognition, which includes metacognitive information, experiences, and strategies, has been shown to help students learn a second language and improve their English communication abilities (Ahmadi et al., 2013; Qin & Zhang, 2019; Tamin & Büyükahıska, 2020; Teng & Zhang, 2022; Wu, 2022; Zhang & Zhang, 2019; Zhang & Zhang, 2022). In addition, metacognitive tactics have been demonstrated to improve student's reading and comprehension skills when included in reading sessions. Metacognitive awareness, including metacognitive reading practices, improved ESL students' ability to self-regulate and draw meaningful conclusions when reading (Al-Jarrah & Ismail, 2018). Individuals' ability to self-regulate their learning process, read with comprehension, and improve their English language skills may all benefit from increased metacognitive awareness. Therefore, the study aims to establish a connection between reading difficulties among ESL learners in KSA and the utilization of metacognitive reading strategies.

II. Literature Review

A. Metacognition and ESL Students

Reading comprehension is frequently difficult for second-language learners of English. Several previous research studies have explored the factors influencing the reading proficiency and comprehension of ESL learners, highlighting the significance of metacognitive strategies (Ahmadian & Pasand, 2017; Al-Jarrah & Ismail, 2018; Alsalihi, 2020; Chen et al., 2016; Kiew & Shah, 2020; Lim et al., 2018; Mansor, 2017; Qrqez & Ab Rashid, 2017; Tamin & Büyükahıska, 2020).

Furthermore, Ahmadian and Pasanda's (2017) research showed that Iranian ESL students who used online reading metacognitive strategies had higher confidence levels in their reading comprehension abilities. The findings shed light on how ESL students may boost their reading comprehension by using efficient methods and developing confidence in their abilities. The research also found that men had greater levels of self-efficacy and that females used more global reading techniques, suggesting that gender may have a role in the reading strategies used by ESL students (Ahmadian & Pasand, 2017).

Researchers have shown a favorable correlation between readers' use of metacognitive methods and their ability to comprehend text written in a second language. ESL teachers may greatly assist their students with reading comprehension and language acquisition by emphasizing efficient reading practices (Ahmadian & Pasand, 2017).

B. Metacognition and Low Achieving ESL Students

Word recognition, study skills, reading comprehension, and fluency are some areas where low achievers struggle, as described by the existing literature (Gambrell & Heathington, 1981; Hoskyn & Swanson, 2000; Micklos, 1990; Vacca, 1999). However, research by Yulit and Safrina (2019) indicates that low-achieving ESL students may greatly benefit from developing their metacognitive abilities, especially in global analysis, to improve their reading comprehension.

In addition to the research, as mentioned earlier, Philips (1992) stressed the need for assistance in assessing learning progress among students who were doing poorly. These children may benefit from guidance in learning to self-regulate and acquiring the tools they need to manage difficult assignments successfully. Low-achieving readers' potential may be unlocked, and their academic advancement supported by an emphasis on metacognition. To enhance their reading abilities, students with difficulty may benefit from developing their metacognitive skills by being more self-aware, keeping track of their progress, and creating effective learning techniques.

III. Methodology

A. Participants

Participants included female ESL learners in upper elementary from a private school in Riyadh, KSA, as well as their instructors. The sample included 54 females, native Arabic-speaking students from KSA between the ages of 10 and 12. Students in this group came from various socioeconomic situations, and most had little opportunity to practice their target language outside of school. Students were tested and interviewed on their reading comprehension only if their parents gave their permission, and they were randomly allocated to an experimental or control group.

B. Experimental Design

Two groups, an "experimental" one and a "control," were used in this study's quasi-experimental design. Twenty-one ESL students with varying levels of proficiency served as the control group. A conventional approach to teaching reading comprehension was used with them, focusing on linguistic elements such as vocabulary, grammar, and syntax.

The experimental group, on the other hand, had 33 students who were likewise divided into three levels based on their English language proficiency: low, average, and high. As part of the intervention, this group was given specific instructions on how to use metacognitive methods. Teachers in the experimental group attended a weeklong training that focused on metacognitive methods for use in the classroom. Over three days, the workshops about six hours of instruction taught instructors how to use these tactics successfully. Afterwards, each test group educator was in charge of a separate classroom.

C. Implementation and Intervention

The control group included three courses taught by educators who had not participated in metacognitive training. The intervention, however, was debated amongst instructors because of their enthusiasm for the exercise. In the experimental group, teachers were instructed to frequently incorporate metacognitive strategies into lesson objectives to facilitate the internalization of skills among students; one teacher from the control group even implemented some of the techniques learned during the limited training, as shared with the researchers. Conversely, the control group did not change their traditional reading comprehension strategy or expressly include a metacognitive approach.

D. Data Collection and Analysis

Teachers gave input based on classroom observations made during the most recent session, and this information was used to compile data on how well the training and methods were being implemented. According to the comments, instructors successfully included metacognitive tactics in their class plans. Teachers typically used various tactics and

related activities in the classroom. Incorporating metacognitive tactics into classroom teaching was supported by students' insightful input.

Students who participated in the intervention were given reading comprehension tests and interviewed to determine their effectiveness. Both groups' reading comprehension and metacognitive ability data were evaluated using standard statistical procedures to identify statistically significant differences.

The study followed a design divided into six phases outlined in Table 1:

TABLE 1
PHASES OF THE INTERVENTION

Dates	Phase number	Description	References
15th to 18th of November (2021)	Phase one	Teachers' training	
2nd of December (2021)	Phase two	Pretests (Reading comprehension)	Appendix (1)
10th to 30th of December	Phase three	Pre- interviews	Appendix (2)
1st of January to 15th of June (2022)	Phase four	The actual implementation in the class	
16th of June (2022)	Phase five	Posttests (Reading comprehension)	Appendix (1)
17th to 30th of June	Phase six	Post interviews	Appendix (2)

E. Training Workshop

The intervention was preceded by teacher training on effective reading techniques, emphasizing metacognition and related techniques. A thirty-minute presentation was provided on metacognition and how it might be used to improve academic performance. Further, the educators saw three movies detailing how to utilize questions to activate and use metacognitive processes. The lecturers in the films constantly participated in the conversation and used various metacognitive techniques.

To better retain the information, the educators participated in several exercises, such as the "3-2-1 Bridge" activity, in which they pondered on and documented the three most recent concepts they acquired, two questions they had, and one picture linked to the material. The Think-Pair-Share exercise was also used to facilitate discussion and ideas sharing. They also engaged in the What Makes You Say That? (WMYST) exercise to practice asking clarifying questions during group discussions.

F. Student Placement Based on Reading Comprehension

All classroom instructors gave pupils a reading comprehension exam developed for this study before the intervention began. The exam evaluated students' ability to grasp and apply the information in reading passages. Students were asked to use their learned metacognitive reading methods to answer each question on the assessment, which included identifying connections, making inferences, and applying the strategies to get the right responses **(see Appendix 1)**. The research used the identical reading comprehension exam for pre-and post-tests.

Students who did not meet the school's standard for passing an exam (a score of at least 50%) were placed in a separate group from those who did. **Table 2** displays the results of a statistical analysis of the student body broken down by major classification.

TABLE 2
STUDENTS' PLACEMENTS

	Exp. group	Cont. group	Total
Underachieving	12	6	18
Achieving	21	15	36
Total	**33**	**21**	**54**

G. Individual Interviews

Students were interviewed individually by the researcher after completing the reading comprehension assessment. In a semi-structured interview, students read and evaluated prompts using metacognitive reading procedures **(see Appendix 2)**. Reading comprehension questions were developed to explore students' usage of reading methods and were asked at various points during the 5- to 10-minute interview sessions. Students were encouraged to use tactics such as predictive phrasing, visualizing, making connections, inferring meaning, and fixing sentences to understand the text's implied meaning better. The interviews with the students were recorded verbatim, and then two scholars in the field of education coded the transcripts.

Students were also questioned on their thoughts on the intervention, their use of the taught metacognitive methods during comprehension, and any gains in reading comprehension ability.

A coding scheme based on a 5-point scale (**see Appendix 3**) was created for efficient analysis of students' replies. Researchers could agree on how successful students' metacognitive methods were because of the coding system used. Eight metacognitive techniques for text comprehension were identified based on a review of the relevant literature

(Alshumaimeri, 2011; Ismail & Tawalbeh, 2015; Iwai, 2011). Students' replies during interviews were evaluated in this way, yielding insightful data on how the intervention affected their ability to understand what they read.

H. Students' Performances of the Reading Comprehension Test

The Kolmogorov-Smirnov test on the student's scores on the pre-and post-reading comprehension exams indicated a non-normal distribution of scores. Therefore, findings within and across groups were compared using non-parametric testing. Students in the control group (UA) and the experimental group (A) had their grades compared using the Wilcoxon Rank-Sum test. In addition, students test scores were compared to their previous grades using the Wilcoxon Signed-Rank test.

The following two studies are presented as separate cases. Using results from pre- and post-tests in reading, the first research provides an overall evaluation of the learning increase for both the experimental and control groups. In the second research, students are separated into higher and lower achievement categories so that the learning gains of the experimental group may be compared to those of the control group.

IV. Results

A. Comparing the Control and Experimental Groups

Since the participants were selected based on their parent's consent, we studied if students of the control and experimental groups were comparable at the start of the intervention.

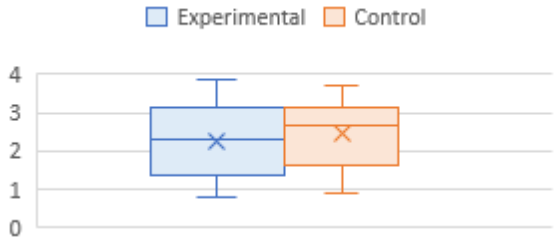

Figure 1. Comparing Students' GPAs Between Experimental and Control Groups at the Start of the Intervention

Although students of the control group' GPAs were, on average higher than the experimental group **(Figure 2)**, the differences were not statistically significant based on a Wilcoxon Rank-Sum test (Z=-1.72; critical value for Z (α=0.05, two-tailed): ±1.96). Regarding GPA, the control and experimental groups were comparable at the start of the intervention.

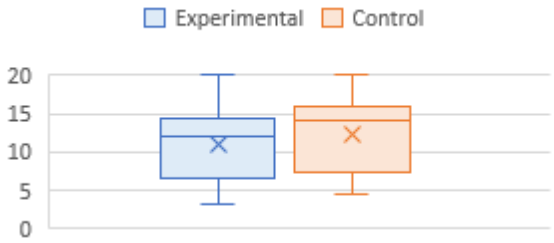

Figure 2. Comparing Students' Grades on the Pre-Reading Test Between the Experimental and Control Groups

We also compared students' grades on the reading comprehension pre-test **(Figure 2)**. The average students' grades in the control group (12.2 out of 20) were slightly higher than in the experimental group (11.1 out of 20). The control group students were also more advantaged than the experimental group regarding the median and minimum values of the grades on the reading comprehension pre-test. A Wilcoxon Sum-Rank test determined that the differences between the control and experimental groups at the start of the intervention were statistically significant (Z=-4.33; critical value for Z (α=0.01, two-tailed): ±2.58). Concerning the reading comprehension pre-test grades, the control group was advantaged compared to the experimental group.

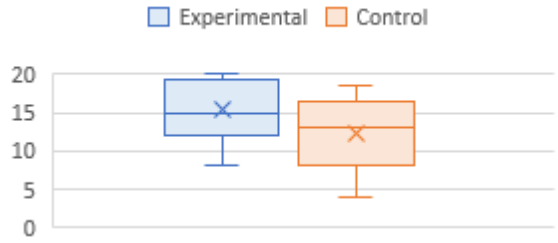

Figure 3. Comparing Students' Post-Reading Test Grades Between the Experimental and Control Groups

A comparison of students' grades on the reading comprehension post-test reveals that the experimental group (15 out of 20) outperformed the control group (13 out of 20) with a higher average rate **(Figure 3)**. This trend is further reflected in the median and minimum grades, where the experimental group excelled compared to the control group. A Wilcoxon Sum-Rank test was conducted to assess the statistical significance of the differences between the two groups after the intervention, resulting in a significant finding (Z = -6.01). The critical value for Z at a significance level of 0.01 (two-tailed) was ±2.58. It is important to note that, in contrast to the post-test performance, the control group initially held an advantage in grades on the reading comprehension pre-test compared to the experimental group.

TABLE 3
COMPARING STUDENTS' GRADES ON PRE- AND POST-READING TESTS BY GROUPS

	Means %		N			Mean Rank		Z	P -value
	Pre test	Post test	Neg. Ranks	Pos. Ranks	Ties	Neg. Ranks	Pos. Ranks		
Cont. group	60.60%	62.00%	6	10	5	9.50	7.90	-0.573	0.567
Exp. group	55.85%	76.60%	1	32	0	1.00	17.50	-5.005	0.000**

Wilcoxon Signed-Rank test was conducted to compare students' pre- and post-reading grades **(Table 3)**. Only about half of the students in the control group improved their scores on the reading test. Almost a third of them scored lower on the post-test. However, all students in the experimental group improved their scores on the post-test. The improvement of students' grades on the reading test was statistically significant for the experimental group but was not so for the control group.

Even though the control group was more advantaged at the start of the intervention, the experimental group students outperformed their peers in the control group (**Figure 2** and **Figure 3**). Notably, students' achievement improved by 20 points on average in the experiment group.

B. Comparing Underachieving and Achieving Students

Since the design was intended primarily to improve the reading comprehension of underachieving students, we conducted a study to compare students' learning gain with groups of levels of achievement: underachieving (UA) and successfully achieving (A) students.

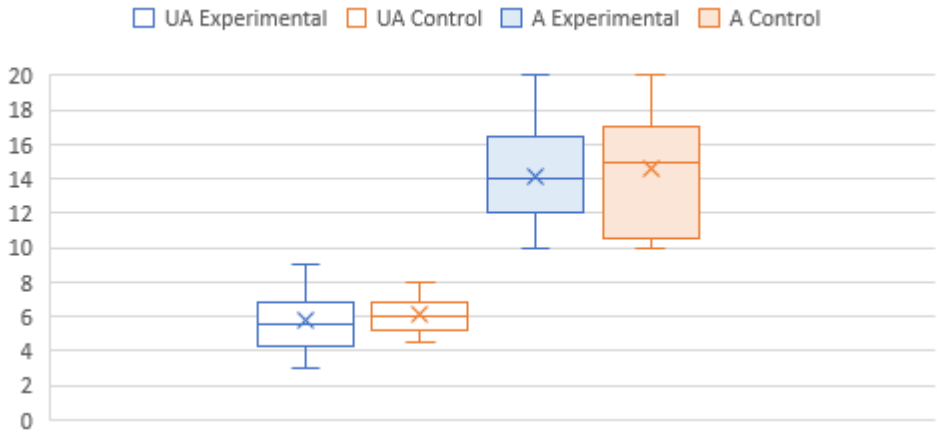

Figure 4. Comparing Pre-Test Scores of Experimental and Control Students Within the Under-Achieving and Achieving Groups

We first examined sub-group comparability within the experimental and control groups **(Figure 4)**. When comparing pre-test scores of students categorized as achievers and underachievers in both groups, we found that the control group had the highest average score among the achieving students, with 17 out of 20 students performing well. On the other

hand, the experimental underachieving group showed lower grades, as indicated by the median and minimum scores for reading comprehension on the pre-test.

To further analyze these differences, we conducted a Wilcoxon Sum-Rank test. The results showed no significant distinctions between the experimental and control groups within the underachieving category (p-value of 0.01). The calculated Z-value (2.045) was lower than the critical value (2.576), suggesting insufficient evidence to conclude a significant difference between the groups in this category.

However, a significant difference was observed between the experimental and control groups within the achieving category. The absolute value of the calculated Z-value (11.439) exceeded the critical Z-value (2.576), indicating a notable distinction between the two groups at a p-value of 0.01. This result highlights a significant discrepancy between the experimental and control groups within the achieving category.

In summary, the underachieving students performed similarly on the reading test at the beginning of the intervention. In contrast, the successfully achieving students in the control group outperformed their counterparts in the experiment group.

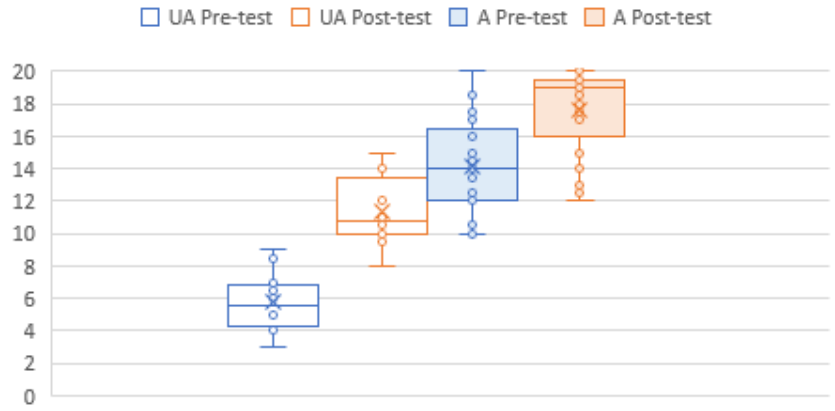

Figure 5. Comparing the Grades of Underachieving (UA) and (A) Achieving Students of the Experimental Group on the Pre-Versus Post-Reading Tests

Notably, improvements were observed regarding the progress of underachieving and achieving students from the experimental group on the pre-and post-reading tests **(Figure 5)**. For underachieving students, the average score increased significantly from 5.8 out of 20 on the pre-test to 11.3 out of 20 on the post-test, representing an improvement of 5.5 points. This increase was statistically significant (T =21.5 > critical value of ±17) at the 0.05 significance level, based on a Wilcoxon Signed-Rank test, indicating a clear difference between the pre-test and post-test scores for underachieving students.

Similarly, achieving students also demonstrated improvement, with their average score rising from 14.1 to 17.6 and median score from 14 to 19 on both the pre-test and post-test. This increase was also statistically significant (T = 36 > critical value of ±34) at the 0.05 significance level, confirming a noteworthy difference between achieving students' pre-test and post-test scores.

This study's findings provide compelling evidence of significant improvement in underachieving and achieving students from the experimental group on pre- and post-reading tests. Underachieving students made substantial progress in their reading comprehension skills, while achieving students showed notable improvement, though less so.

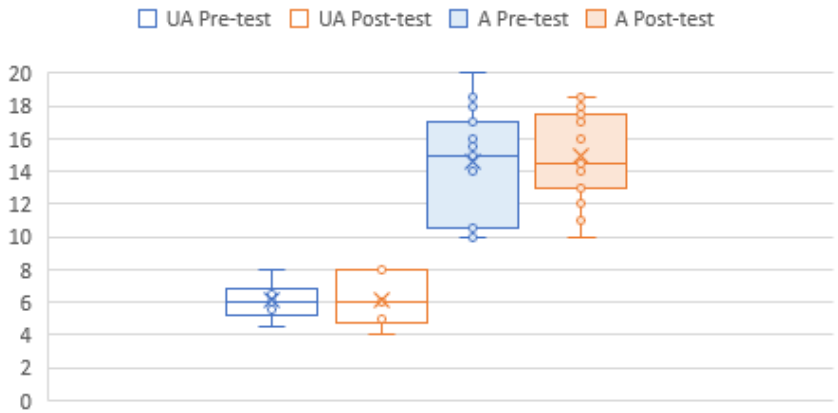

Figure 6. Comparing the Grades of Underachieving (UA) and (A) Achieving Students of the Control Group on the Pre-Versus Post-Reading Tests

To appraise students' improvement in the experimental sub-groups, we studied students' learning gain in the control sub-groups (**Figure 6**). For underachieving students of the control group, their average scores increased from 6 out of 20 on the pre-test to 6.2 out of 20 on the post-test. Similarly, achieving students in the control group saw their average scores rise from 14.6 to 14.9 out of 20 on both the pre-test and post-test. While there was an improvement, it was slight compared to the results of the experimental sub-groups.

We conducted a Wilcoxon Signed-Rank test to assess the significance of the differences between the pre-test and post-test scores for underachieving and achieving students in the control group. The test statistic (T) value for underachievers exceeded the critical value ($T = 19 > 15$), indicating a statistically significant difference at the $\alpha = 0.05$ significance level. Similarly, for the achievers in the control group, the test statistic (T) value ($T = 25$) surpassed the critical value ($T = 12$), confirming a statistically significant difference between the pre-test and post-test scores. However, the improvement observed in the achievers' scores was modest compared to the experimental group results. The average score of the underachieving students in the experimental group improved by 5.5 points, while their counter peers in the control group improved by only 0.2 points. Similarly, the successfully achieving students in the experimental group improved on average by 3.5 points, while their counter peers in the control group by only 0.3 points.

Overall, the analyses in this study showed that students who received training on metacognitive reading strategies significantly improved their scores on reading comprehension tests. While the design of the instruction was intended to benefit underachieving students, it also benefited the successful ones.

C. Evaluating Students' Use of Metacognitive Reading Strategies

This section presents the study's results on students' use of metacognitive reading strategies. Two trained educational researchers, among whom the first author, coded the students' behaviors as they engaged in a reading exercise before and after the instructional intervention.

To ensure reliability and consistency, the two coders conducted several meetings to discuss and align their understanding of the coding scheme and students' responses to the interview questions. In the initial meeting, they meet to discuss the rubrics and code together five responses about each reading strategy. After that, each coder independently evaluated students' responses using an earlier version of the rubrics.

The coders reconvened for a second meeting to compare and discuss their scores, aiming to identify any disparities and address them collaboratively. This meeting also involved fine-tuning the coding scheme to enhance its clarity and effectiveness. Once more, the coders systematically revisited their scores based on the new coding scheme.

They discuss obstacles in the second coding exercise in the third and final meeting. Since no changes were needed for the rubric, statistical tests were conducted to study the agreement of coders' scores on each strategy for each question. Depending on the questions and reading strategies, the coders agreed between 81.5% and 99% of the time. The average of the two coders' scores was submitted for statistical analysis.

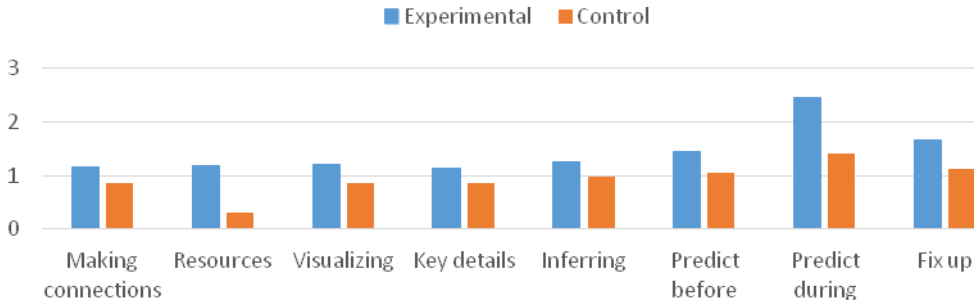

Figure 7. Improvement in Metacognitive Reading Strategies Between Control and Experimental Groups

The experimental and control groups improved reading strategies (**Figure 7**). The progress ranged from 0.31 to 2.44 points on a 5-point scale. Notably, the experimental group surpassed the control group in their reading strategy application quality by an average of 0.5 points.

Specifically, the experimental group showed significantly more improvement than the control group in three key reading strategies: predicting during the reading activity, utilizing external resources, and addressing misunderstandings. These findings highlight the experimental group's enhanced proficiency in these specific aspects of reading strategies.

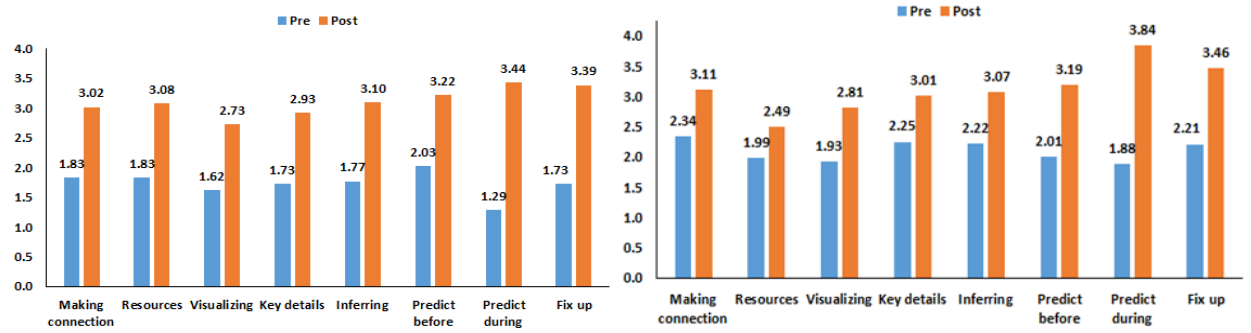

Figure 8. Comparing Students' Metacognitive Strategies in the Pre and Post Interviews for the Underachieving (First Graph) and High-Achieving (Second Graph) Students

The study's results, presented in **Figure 8**, indicate that all students in the experimental group made significant progress in utilizing the strategies taught during the intervention. Each of the techniques employed by the students demonstrated statistical significance at a level of $p<0.01$. The interview phase provided valuable insights into the range of strategies utilized by the students, including making connections, visualization, making predictions, inferencing, using resources, focusing on key details, and employing the fix-up strategy.

Notably, the underachieving students initially showed lower proficiency in employing each strategy than high achievers (compare blue bars in the top and bottom graphs of **Figure 7**). However, in the post-interview, after the instruction, the low achievers gradually improved and reached a similar level as the high achievers (compare orange bars in the top and bottom graphs of **Figure 7**). In fact, in some instances, the low achievers even surpassed the average scores of the high achievers.

The findings in **Figure 7** suggest that the strategies taught during the intervention were particularly effective in assisting low-achieving students in accurately utilizing reading strategies. These results underscore the significance of the intervention in elevating the reading strategy utilization of low-achieving students, closing the proficiency gap between them and high achievers.

The students significantly improved their use of the understudied metacognitive strategies. The scores moved from below average (between 1.2 and 2.25 on a scale of 5) to above average (3.49 to 3.84). While the improvement is salient, none of the strategies received a high score (above 4).

V. Discussion and Conclusion

The major purpose of this research was to examine the impact of teaching underperforming ESL students in KSA explicit metacognitive reading strategies on their reading comprehension. Reading comprehension test results before and after training showed a statistically significant improvement in student performance. Low- and high-performing students saw an increase of 20 points in their reading comprehension scores. Based on the school's success threshold, 10 out of 12 low-achieving students in the experimental group succeeded in reading comprehension, scoring above 50%.

Not only did students improve their test scores, but we also observed them in individual interviews improving their use of the metacognitive reading strategies they were taught in class. The underachieving students of the experiment group saliently enhanced the quality of their use of the taught reading strategies to the same level as the high-achieving students.

The results of this study are consistent with the literature that emphasizes the value of metacognitive reading methods for improving readers' comprehension in second language learners. Multiple studies have shown that metacognition improves students' ability to understand what they read.

For instance, Auerbach and Paxton (1997) highlighted the significance of metacognition in efficient second-language reading, finding that students who consciously used metacognitive strategies had greater gains in comprehension and performance. Similar results were found in research by Rusciolelli (1995), in which adult ESL students were trained in metacognitive strategies to improve their reading comprehension. Moreover, results of our study provide more credence to published research by showing that training in metacognitive reading strategies leads to improved reading comprehension. This is consistent with findings from studies by Karbalaei (2010) and Cubukcu (2008), which found that teaching adults ESL reading strategies led to substantial gains in reading ability.

Our findings are further supported by Anderson's (2003) research which emphasis on the idea that reading development is a process that takes place over time and is favorably influenced by active involvement in metacognitive processes while reading. The steady gains in reading ability shown by the experimental group throughout the follow-up period lend credence to this assertion (Anderson, 2003). In addition, Gordon and Lu's (2008) research found that students' reading performance improved significantly after receiving instruction on how to pick the most effective reading strategies. Our data support these results, showing that the experimental group reaped persistent advantages from the reading training program far into the follow-up period (Gordon & Lu, 2021).

Since there was room for further improving the quality of metacognitive strategies (having average scores above 4), future studies might investigate learning and teaching methods that could lead to higher improvements than the proposed teaching technique. Further studies could also investigate the various teaching practices of reading strategies and the differentiated impact on students' behaviors and scores. We remark that the control group improved the use of the studied reading strategies, although they did not significantly improve their scores on the reading test. We are curious if the teachers in the control group, upon learning about the teaching techniques from their colleagues in the experimental group and implementing them in their classrooms, contributed to developing their students' reading strategies.

The leaders of the school where the experiment took place decided to implement this teaching techniques school-wide, following the positive feedback from their teachers and students about the intervention. The findings reported in this paper encourage other school leaders and teachers to follow suit if such teaching practices are not part of their expertise. The evaluation of the school-wide implementation is ongoing and will be reported in future publications.

Finally, our findings contribute to the literature on the value of metacognitive reading methods for ESLs. The substantial improvement in reading comprehension among low-performing students lends credence to the idea that metacognitive therapies may successfully close the achievement gap between low- and high-performing students.

Note:

Supporting data is available on request from the authors at *LMCJ38@hotmail.com and Loussine_Momdjian@outlook.com*. The appendixes contain 1) The reading comprehension test, 2) The interview description, and 3) Data on rubrics for the coding scheme of metacognitive strategies.

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