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Exploring the Effectiveness of Metacognitive Strategies for Improving the Reading Comprehension Skills of Undergraduates in Pakistan

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Abstract

This study investigates the effectiveness of metacognitive strategies in enhancing the reading comprehension skills of undergraduate students in Pakistan. Reading comprehension is a critical component of academic success, yet many undergraduates struggle to process and retain information effectively due to limited awareness of self-regulated learning approaches. Metacognitive strategies—such as planning, monitoring, and evaluating one's reading process- enable learners to take active control of their comprehension, thereby fostering deeper engagement with texts. A quasi-experimental design was employed, involving two groups: an experimental group receiving explicit training in metacognitive strategies and a control group receiving traditional reading instruction. Participants were selected from undergraduate English language learners at a public-sector university in Sindh, Pakistan. Data were collected using pre- and post-intervention reading comprehension tests, supplemented by self-reported questionnaires on strategy use. Statistical analysis was conducted to measure the mean differences and significance levels between groups. The results indicated a significant improvement in the reading comprehension scores of the experimental group compared to the control group, demonstrating the positive impact of metacognitive strategy training. Furthermore, qualitative feedback revealed that students developed greater confidence and autonomy in approaching complex texts. The study concludes that integrating metacognitive strategy instruction into undergraduate curricula can substantially enhance reading comprehension skills, promote independent learning, and address persistent academic challenges. These findings have important pedagogical implications for English language teaching in Pakistan, suggesting the need for teacher training and curriculum reforms to incorporate metacognitive approaches in reading instruction.

Keywords: Metacognitive Strategies, Reading Comprehension, Quasi-experimental Research Design, Undergraduates

Introduction

Reading comprehension is widely recognized as one of the most essential academic skills, forming the basis for learning across all disciplines. It is more than simply decoding words; it involves constructing meaning, making inferences, synthesizing information, and critically evaluating ideas. In higher education, the ability to comprehend complex texts is indispensable for success, as students are required to engage with research articles, textbooks, and academic essays that demand higher-order thinking skills (Grabe & Stoller, 2013).

Globally, educational research highlights that reading comprehension is not purely a linguistic process but also a cognitive and metacognitive one. Metacognition, a concept popularized by Flavell (1979), refers to the awareness and regulation of one's thinking processes. In the context of reading, metacognitive strategies include activities such as planning how to approach a text, monitoring comprehension during reading, and evaluating understanding after reading. These strategies encourage learners to take active control of their reading process, enabling them to adjust their

approach according to the difficulty of the text and the purpose of reading (Anderson, 2002).

Studies conducted in both ESL (English as a Second Language) and EFL (English as a Foreign Language) settings demonstrate that explicit instruction in metacognitive strategies significantly improves comprehension outcomes. For instance, teaching learners to preview a text, predict content, identify main ideas, ask clarifying questions, and summarize key points has been shown to increase reading efficiency and retention (Ahmadi et al., 2013). Moreover, metacognitive strategies foster learner autonomy, enabling students to become independent readers who can tackle challenging materials beyond the classroom.

In Pakistan, English holds a unique position as both an official language and the medium of instruction in most universities. Proficiency in English, particularly in academic reading, is not only essential for educational achievement but also for access to global knowledge and professional advancement. Despite this, many undergraduates struggle with reading comprehension, especially when confronted with discipline-specific academic texts. This struggle is often due to limited vocabulary, inadequate exposure to authentic reading materials, and a lack of explicit training in effective reading strategies (Rao, 2002).

Although the importance of metacognitive strategies for reading comprehension has been widely documented in international research, their systematic integration into Pakistani higher education remains limited. In many public-sector universities, reading instruction is still largely traditional, focusing on translation, vocabulary memorization, and surface-level understanding of texts. Students are rarely taught how to plan their reading, monitor their comprehension, or evaluate their knowledge. As a result, they may rely on rote memorization or mechanical translation, which hinders deeper understanding and critical engagement with academic content (Fareed et al., 2016).

This gap between research evidence and teaching practice creates a significant challenge for undergraduate students in Pakistan. Without targeted strategy instruction, students may continue to experience low comprehension levels, which in turn affects their academic performance across all subjects. Additionally, the lack of confidence in reading academic texts can discourage students from engaging in self-directed learning, further limiting their educational growth.

Empirical studies focusing on metacognitive reading strategy instruction in the Pakistani context are scarce. While some research has been conducted at the school level, there is insufficient evidence regarding the effectiveness of such strategies in improving reading comprehension among undergraduates. This absence of local research makes it difficult for educators and policymakers to make informed decisions about curriculum design and teacher training.

Therefore, there is a pressing need to explore how explicit instruction in metacognitive strategies can impact undergraduate students' reading comprehension in Pakistan. Such research could provide practical insights for developing more effective reading instruction methods and bridging the gap between global best practices and local teaching realities.

Research Questions

To address this gap, the present study is guided by the following research questions:

1. To what extent does explicit instruction in metacognitive strategies improve the reading comprehension skills of undergraduate students in Pakistan?
2. Which specific metacognitive strategies are most effective in enhancing comprehension among undergraduate students?
3. How does metacognitive strategy instruction influence students' attitudes and confidence towards reading academic texts in English?

Literature Review

Metacognitive strategies have received considerable attention in second language acquisition and reading research due to their significant impact on comprehension outcomes. The concept of metacognition, introduced by Flavell (1979), refers to an individual's awareness of and control over their cognitive processes. In reading, metacognitive strategies include planning before reading, monitoring comprehension during reading, and evaluating understanding after reading (Anderson, 2002).

Metacognitive Strategies and Reading Comprehension

Numerous studies have demonstrated a positive relationship between metacognitive strategy instruction and improved reading comprehension skills. Ahmadi et al. (2013) emphasize that metacognitive strategies such as predicting, summarizing, and questioning enable readers to construct meaning actively. Grabe and Stoller (2013) note that these strategies also help readers adapt their approach according to the complexity of the text. Similarly, Mokhtari and Reichard (2002) developed the Metacognitive Awareness of Reading Strategies Inventory (MARSI), which has been widely used to assess learners' strategy use and link it with comprehension performance.

International Evidence

Research conducted in EFL contexts has repeatedly confirmed that explicit training in metacognitive strategies improves comprehension. Zhang and Wu (2009) found that Chinese university students who received metacognitive strategy instruction outperformed their peers in comprehension tests. Likewise, Sheorey and Mokhtari (2001) reported that high-performing ESL students employ metacognitive strategies more frequently than low-performing peers, suggesting a link between strategic reading and academic achievement.

Pakistani Context

In Pakistan, the integration of metacognitive strategies into reading instruction is limited. Most public universities focus on traditional reading practices such as translation and vocabulary drills (Fareed et al., 2016). Few empirical studies exist on metacognitive instruction at the tertiary level, though research at the secondary level shows promising results (Khan & Khan, 2012). Given the importance of English as the medium of instruction and a key to professional advancement, the absence of structured metacognitive training represents a missed opportunity to enhance students' academic performance and lifelong learning skills.

Gap in Literature

While international research offers strong evidence for the effectiveness of metacognitive strategies, there is a lack of context-specific studies in Pakistan,

particularly among undergraduate populations. This gap underscores the need for research that tests these strategies in Pakistani higher education to determine their adaptability and effectiveness within local linguistic and cultural contexts.

Research Methodology

This study employed a quasi-experimental design with a pre-test/post-test control group format to assess the effectiveness of metacognitive strategy instruction in improving reading comprehension. The participants were 60 undergraduate students enrolled in English language courses at a public-sector university in Sindh, Pakistan. They were divided into two groups: 30 students in the experimental group and 30 in the control group. The groups were comparable in terms of age, gender distribution, and English proficiency levels, as determined by a placement test.

Instruments

Reading Comprehension Test – Developed using academic texts relevant to the participants' coursework, including multiple-choice, short-answer, and inference-based questions.

Metacognitive Awareness of Reading Strategies Inventory (MARSI) – Adapted from Mokhtari and Reichard (2002) to assess students' self-reported strategy use.

Questionnaire on Reading Attitudes – Designed to gather qualitative data on students' perceptions of reading and confidence levels.

Procedure

- **Pre-Test**: Both groups completed the reading comprehension test and MARSI before the intervention.
- **Intervention**: The experimental group received eight weeks of explicit instruction in metacognitive strategies (planning, monitoring, and evaluating) integrated into their reading lessons. The control group continued with traditional reading instruction without explicit strategy training.
- **Post-Test**: Both groups completed the same tests after the intervention.

Quantitative data were analyzed using paired sample t-tests and independent sample t-tests to compare pre- and post-test results within and between groups. Qualitative data from questionnaires were analyzed thematically.

Findings

Research Question 1

To what extent does explicit instruction in metacognitive strategies improve the reading comprehension skills of undergraduate students in Pakistan?

Table 1: Pre-Test and Post-Test Mean Scores by Group

Group	Pre-Test Mean	Post-Test Mean	Mean Difference	*p*-value
Control	57.00	59.43	+2.43	0.118
Experimental	58.00	76.00	+18.00	<0.001***

Interpretation

The experimental group showed a substantial mean increase of **+18 points**, while the control group's improvement was minimal (**+2.43 points**). An independent samples t-test confirmed a statistically significant difference between post-test scores of the experimental and control groups ($p < 0.001$). This demonstrates that explicit metacognitive strategy instruction had a strong positive effect on reading comprehension.

Research Question 2

Which specific metacognitive strategies are most effective in enhancing comprehension among undergraduate students?

Table 2: Increase in MARSI Strategy Scores (Experimental Group)

Strategy Type	Pre-Test Mean	Post-Test Mean	Mean Increase	*p*-value
Global Strategies	3.12	3.89	+0.77	<0.001***
Problem-Solving	3.21	3.95	+0.74	<0.001***
Support Strategies	3.05	3.72	+0.67	<0.001***

Interpretation

The largest gain was in **Global Strategies** (+0.77), which includes previewing text, setting reading goals, and predicting content. These were followed by **Problem-Solving Strategies** (+0.74), such as re-reading difficult sections and using contextual clues, and **Support Strategies** (+0.67), including note-taking and highlighting. The statistical significance of all three categories ($p < 0.001$) indicates that comprehensive training across multiple strategy types contributed to the improvement in comprehension.

Research Question 3

How does metacognitive strategy instruction influence students' attitudes and confidence towards reading academic texts in English?

Table 3: Change in Reading Attitude Scores (Experimental Group)

Attitudinal Dimension	Pre-Test Mean	Post-Test Mean	Mean Increase	*p*-value
Confidence in Reading	2.98	4.12	+1.14	<0.001***
Enjoyment of Reading	3.15	4.08	+0.93	<0.001***
Perceived Reading Autonomy	2.85	4.05	+1.20	<0.001***

Interpretation

After the intervention, students in the experimental group reported significantly higher confidence in approaching academic texts (+1.14), increased enjoyment of reading (+0.93), and a stronger sense of autonomy in their reading process (+1.20). The qualitative feedback from open-ended survey questions revealed that students felt more "in control" of their reading, better able to "understand without constant dictionary use," and more willing to read beyond assigned materials.

Discussion

The substantial gain observed in our experimental group (mean difference +18) versus the control group's modest improvement aligns closely with findings in similar contexts. For instance, Batool and Siddiquah (2022) demonstrated significant post-test gains among Pakistani Grade 11 students who received explicit training in strategies like predicting and summarizing. Likewise, Nazar and Rashid (2025) reported marked improvement in intermediate ESL students in Pakistan following a similar quasi-experimental intervention. These parallels underscore the replicable and robust impact of metacognitive strategy instruction across academic levels in Pakistan. Moreover, Hashmi's 2024 study involving M.A. English students found that planning, monitoring, and evaluating strategies directly enhanced comprehension, reinforcing the effective role of these three components—all featured prominently in our intervention design.

This analysis shows that global strategies yielded the highest mean increase, followed closely by problem-solving and support strategies. This pattern resonates with findings from Azher et al. (2015), where postgraduate students in Pakistan favored global strategies and achieved higher comprehension scores, though problem-solving strategists outperformed others in test results. This suggests that while planning and previewing (global strategies) are widely adopted, deeper engagement via problem-solving has a stronger link to performance. In our study, balanced improvement across all three types suggests the comprehensive design of the instruction was effective, encouraging both surface-level scaffolding and deep processing.

Participants in our experimental group reported significant boosts in confidence, enjoyment, and perceived autonomy. These affective improvements mirror key tenets of the Concept-Oriented Reading Instruction (CORI) framework, which links strategic and motivational gains with cognitive outcomes. While CORI was developed for younger learners, motivational dynamics apply equally to university students: when students feel more confident and engaged, they are likelier to use strategies consistently.

Similarly, reciprocal teaching research—which employs questioning, summarizing, clarifying, and predicting—has shown that such collaborative, metacognitive engagement increases both comprehension and learner agency. Our findings suggest that even a teacher-led version of strategy instruction can spark similar motivational shifts among undergraduates.

Conclusion

The present study investigated the effectiveness of metacognitive strategies in improving the reading comprehension skills of undergraduates in Pakistan. The findings clearly indicate that students in the experimental group, who were systematically trained in planning, monitoring, and evaluating their reading processes, showed a significant improvement in post-test scores compared to the control group. This suggests that metacognitive strategy instruction not only enhances comprehension but also empowers students to take greater control over their learning.

The results are consistent with the work of Mokhtari and Reichard (2002) and Ahmadi et al. (2013), who highlighted the transformative effect of metacognitive awareness on reading performance. Furthermore, this study reinforces the idea that reading comprehension is not merely a linguistic skill but also a cognitive and self-regulatory process. In the Pakistani higher education context, where traditional teaching often

prioritizes content coverage over strategy instruction, the integration of metacognitive approaches could help address persistent challenges in English reading proficiency.
Overall, the research provides strong empirical evidence that embedding metacognitive strategies in reading instruction can yield measurable and sustainable benefits, particularly in developing countries where English functions as a critical academic and professional skill.

Recommendations

Integrate Metacognitive Strategy Training into Curriculum: Higher education institutions should incorporate explicit metacognitive strategy instruction into reading courses, focusing on planning (previewing texts, setting goals), monitoring (self-questioning, summarizing), and evaluating (reflecting on understanding).

Professional Development for Teachers: Teacher training programs should equip educators with the knowledge and tools to model and scaffold metacognitive strategies effectively in the classroom.

Use Technology-Supported Reading Tools: Incorporating digital platforms and interactive reading apps with built-in metacognitive prompts can engage learners and promote self-monitoring of comprehension.

Encourage Self-Reflection Among Students: Students should be guided to maintain reading journals or self-assessment checklists to document their strategy use and progress.

Further Research: Future studies should examine the long-term effects of metacognitive strategy instruction across different disciplines, proficiency levels, and educational contexts in Pakistan to generalize findings more broadly.

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