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A COMPARATIVE STUDY OF READING STRATEGIES FOR ACADEMIC SUCCESS IN ESL UNDERGRADUATES

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Abstract

Reading comprehension is crucial for academic achievement, especially for English as a Second Language (ESL) learners in higher education. These students face unique challenges with complex academic texts. While reading strategies are widely studied, the comparative effectiveness of explicit instruction in different strategy types—metacognitive and cognitive—remains unclear for deep comprehension of such texts. This article presents an imagined study that investigated the impact of metacognitive and cognitive reading strategy interventions on ESL undergraduates' understanding of complex, discipline-specific materials. A quasi-experimental design was used, featuring pre- and post-tests, and a strategy use questionnaire. The study examined the relative efficacy of these strategy categories. Results suggest that both metacognitive and cognitive strategy instruction improved reading comprehension significantly. However, the metacognitive strategy group showed a more substantial and sustained improvement, particularly in critical analysis and inference. These findings highlight the importance of explicit strategy instruction in ESL academic settings. Metacognitive strategies appear especially valuable for empowering learners to engage with complex academic discourse effectively. The article discusses pedagogical implications and study limitations. It also proposes future research directions to further refine effective reading strategy instruction for ESL learners in higher education.

Keywords: *Reading Comprehension, Metacognitive Strategies, Cognitive Strategies, ESL, Academic Texts, Strategy Instruction, Higher Education.*

Introduction. Doctoral education (DE) sits at the top of the higher education (HE) pyramid, serving as a catalyst for building research capacity in universities. Reading comprehension is fundamental to academic success, especially at this level. For ESL learners in university, the ability to understand complex academic texts is paramount. They must navigate not only linguistic complexities and specialized vocabulary but also unfamiliar academic structures and cultural nuances embedded within discourse (Flowerdew & Peacock, 2001; Lee & Schallert, 2016). Reading comprehension is more than just decoding words. It involves constructing meaning and critical evaluation – skills vital for academic progress and intellectual growth.

Research has consistently shown the critical role of reading strategies in aiding comprehension (Anderson, 2009; Oxford, 1990). Reading strategies are conscious actions readers take to improve text understanding (Sheorey & Mokhtari, 2001). These strategies are broadly categorized into cognitive and metacognitive types. Cognitive strategies are direct mental operations for text processing, including summarizing and inferencing (O'Malley & Chamot, 1990). Metacognitive strategies involve higher-level skills for regulating and monitoring cognitive processes. These include planning, monitoring, and evaluating reading (Flavell, 1979; Schraw & Dennison, 1994). Surmanov and Azimova (2021) emphasize the importance of forming reading skills in young learners, laying a foundation for these more advanced strategies.

While the general benefits of reading strategy instruction are well-established (e.g., Block & Israel, 2004; National Reading Panel, 2000), a key question remains unanswered: How do metacognitive and cognitive strategy instructions compare when explicitly taught to ESL learners dealing with complex academic texts? Much research focuses on general comprehension or simpler texts, not the demands of university-level discourse. Often, strategy instruction is treated as uniform, without differentiating metacognitive and cognitive approaches (Afflerbach et al., 2008). This gap is significant. Complex academic texts demand not just basic understanding (cognitive strategies), but also self-regulation and critical engagement (metacognitive strategies) for true comprehension (Perfetti, Landi, & Oakhill, 2005). Surmanov (2024) highlights the use of graded readers for reading skill development, but the efficacy of specific cognitive versus metacognitive strategies for complex academic texts remains a distinct area of inquiry.

This imagined research addresses this gap. It investigates the comparative effectiveness of explicit instruction in metacognitive versus cognitive reading strategies on complex academic text comprehension among ESL undergraduates. We propose that while both strategy types will improve comprehension, metacognitive strategy instruction will yield a more significant and nuanced enhancement, especially in critical analysis and self-regulation. These are crucial for mastering demanding academic content. Sardor, Oyshajon, and Rushana (2020) discuss difficulties in online reading for young learners, underlining the need for effective strategies, especially in evolving educational landscapes.

This article presents an imagined quasi-experimental study comparing metacognitive and cognitive strategy instruction effects on ESL undergraduates' reading of complex academic texts from their disciplines. First, the methodology will be detailed, including participants and procedures. Next, the study's findings will be presented objectively. Then, these results will be

discussed, interpreted in light of existing research, and practical and research implications will be highlighted. Finally, the article concludes with key contributions and pedagogical recommendations from this imagined research.

2. Methods

2.1 Participants

One hundred and twenty ESL undergraduate students participated in this imagined study. They were enrolled across various degree programs at a large public university. Participants were recruited from introductory courses where academic reading was substantial. All participants met university English proficiency requirements (B2-C1 CEFR), evidenced by TOEFL iBT or IELTS scores. Most participants were from Asian backgrounds, typical of the university's ESL demographic. Egamovich (2021) explored graded readers with law students, indicating diverse student populations and contexts where reading strategies are relevant, although this study focuses on a different demographic and strategy type.

Informed consent was secured from all students prior to participation. A reading comprehension pre-test established baseline levels and ensured comparable abilities across participants before group assignment. Participants with very high or low pre-test scores were excluded to focus the intervention appropriately. This screening resulted in the final sample of 120 students.

2.2 Research Design and Context

A quasi-experimental pre-test, post-test control group design was used. Participants were randomly assigned to a Metacognitive Strategy Instruction group (MSI), a Cognitive Strategy Instruction group (CSI), or a Control group (CG), each with 40 participants. Random assignment was stratified by academic discipline.

The intervention spanned 12 weeks. MSI and CSI groups received explicit reading strategy instruction integrated into their coursework. Trained instructors delivered instruction, standardized for each strategy type. Sessions were twice weekly, 50 minutes each, totaling 40 hours. These sessions were supplementary and focused only on strategy development.

The Control group continued regular coursework without strategy instruction. They were offered general academic skills workshops post-study as a compensatory benefit.

The instructional context was designed to be realistic, mirroring academic reading demands. Reading materials were authentic excerpts from textbooks and journal articles used in introductory courses. Texts were selected as 'complex academic texts' based on criteria such as:

- Lexical Density: High content words and specialized vocabulary.
- Syntactic Complexity: Complex sentence structures and embedded clauses.
- Conceptual Abstraction: Abstract, theoretical concepts.
- Disciplinary Conventions: Genre-specific structures in academic writing.

2.3 Instruments

Data were collected using a reading comprehension pre-test and post-test, and a strategy use questionnaire, administered before and after the intervention.

2.3.1 Reading Comprehension Tests (Pre-test & Post-test)

Parallel forms of a standardized reading comprehension test were used. These were adapted for complex academic texts and deemed suitable for advanced ESL learners. Each test included three discipline-specific passages from Humanities, Social Sciences, and STEM, each 800-1000 words, with 15 multiple-choice questions per passage. Questions assessed:

- Literal Comprehension: Explicit information.
- Inferential Comprehension: Implicit meanings.
- Critical Analysis: Evaluating arguments and author's purpose.
- Vocabulary in Context: Specialized vocabulary.

Pilot testing with similar ESL students (n=20) validated the tests and refined item difficulty. Reliability analysis yielded a Cronbach's alpha of 0.82. Scoring was objective (one point per correct answer; maximum 45). Test forms were counterbalanced.

2.3.2 Strategy Use Questionnaire

A Strategy Use Questionnaire (SUQ) assessed self-reported strategy use frequency before and after the intervention. Adapted from validated questionnaires (e.g., MARSI; Mokhtari & Sheorey, 2002), the SUQ focused on strategies for complex academic texts.

The SUQ had 30 items, with Metacognitive (15 items) and Cognitive Strategies (15 items) subscales. Items were statements describing strategies (e.g., "Before reading, I preview headings" - Metacognitive; "I guess word meanings from context" – Cognitive). Participants rated frequency on a 5-point Likert scale (1=Never, 5=Always).

Open-ended questions explored perceptions of strategy usefulness and changes in reading approaches. Expert review ensured content validity. Pilot test Cronbach's alpha was 0.85 for Metacognitive and 0.80 for Cognitive Strategy subscales.

2.4 Intervention Procedures

2.4.1 Metacognitive Strategy Instruction (MSI) Group

The MSI group received explicit instruction on metacognitive reading strategies. Instruction focused on self-regulation, monitoring, and strategic planning. Strategies included:

- Planning and Goal Setting: Setting purposes, previewing, activating knowledge.
- Monitoring Comprehension: Checking understanding, using fix-up strategies.
- Evaluating Reading Processes: Reflecting on effectiveness, identifying improvements.
- Self-Questioning: Generating questions for comprehension.
- Summarization and Synthesis: Condensing ideas, connecting information.

Instruction involved modeling, think-alouds,

collaborative practice, and reflective journaling. Students learned when, why, and how to use each strategy, practicing on authentic academic texts.

2.4.2 Cognitive Strategy Instruction (CSI) Group

The CSI group received explicit instruction on cognitive reading strategies, focusing on text processing and meaning construction. Strategies included:

• Vocabulary Development Strategies: Context clues, morphology, dictionary use.

• Syntactic Analysis: Breaking down complex sentences.

• Inferencing and Deduction: Drawing logical inferences.

• Summarization and Note-Taking: Identifying main ideas, organizing information.

• Text Structure Awareness: Recognizing academic text structures.

Instruction involved explanation, modeling, guided practice, vocabulary building, sentence analysis, and graphic organizers. Students practiced applying strategies to complex texts under guidance.

2.5 Data Analysis

Quantitative data from tests and questionnaires were analyzed using SPSS. Paired sample t-tests compared pre- and post-test scores within each group. Mixed-design ANOVA assessed Time and Group effects. Significant interactions indicated intervention differences. Post-hoc tests (Bonferroni) were planned. Effect sizes were calculated.

For SUQ data, t-tests examined strategy use changes within groups. Independent t-tests compared change scores between MSI and CSI groups.

Qualitative data from open-ended SUQ questions were analyzed thematically. Coding, theme identification, and pattern interpretation were used to complement quantitative findings.

3. Results

3.1 Reading Comprehension Test Performance

Table 1 shows descriptive statistics for reading comprehension scores.

Table 1: Descriptive Statistics for Reading Comprehension Scores (Mean & SD)

Group	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference (SD)
MSI (n=40)	28.50 (4.20)	35.25 (3.85)	6.75 (2.50)
CSI (n=40)	28.75 (4.50)	33.00 (4.10)	4.25 (2.20)
Control (n=40)	28.60 (4.35)	29.10 (4.55)	0.50 (1.80)

Pre-test scores were similar across groups, indicating successful randomization. Post-test scores differed noticeably. MSI and CSI groups improved, while the Control group showed minimal change.

Paired t-tests confirmed significant improvements for MSI ($t(39) = 10.25$, $p < .001$, $d = 1.63$) and CSI ($t(39) = 7.50$, $p < .001$, $d = 1.19$). Control group change was not significant ($t(39) = 1.18$, $p = .245$, $d = 0.19$). Effect sizes were large for interventions, negligible for control.

Mixed-design ANOVA revealed a significant Time and Group interaction ($F(2, 117) = 22.80$, $p < .001$, partial $n^2 = .28$). This indicates that reading comprehension score changes over time differed across groups.

Post-hoc comparisons showed MSI post-test scores significantly higher than CSI ($p < .05$, $d = 0.60$) and Control ($p < .001$, $d = 1.50$). CSI post-test scores were also significantly higher than Control ($p < .001$, $d = 0.90$). Both interventions outperformed the Control, with MSI outperforming CSI.

3.2 Strategy Use Questionnaire Results

Table 2 shows descriptive statistics for strategy use questionnaire scores.

Table 2: Descriptive Statistics for Strategy Use Questionnaire Scores (Mean & SD)

Group	Pre-test Metacognitive Mean (SD)	Post-test Metacognitive Mean (SD)	Pre-test Cognitive Mean (SD)	Post-test Cognitive Mean (SD)
MSI (n=40)	2.80 (0.50)	3.95 (0.60)	3.20 (0.45)	3.50 (0.55)
CSI (n=40)	2.75 (0.55)	3.10 (0.50)	3.15 (0.50)	4.10 (0.60)
Control (n=40)	2.85 (0.48)	2.90 (0.52)	3.25 (0.48)	3.30 (0.50)

Paired t-tests showed significant increases in metacognitive strategy use for MSI ($t(39) = 12.50$, $p < .001$, $d = 1.98$) and a smaller increase for CSI ($t(39) = 4.20$, $p < .001$, $d = 0.67$). No significant change for Control ($t(39) = 0.85$, $p = .400$, $d = 0.14$).

Similarly, cognitive strategy use increased significantly for CSI ($t(39) = 11.20$, $p < .001$, $d = 1.77$) and less so for MSI ($t(39) = 3.80$, $p < .001$, $d = 0.60$). Control group showed no significant change ($t(39) = 1.05$, $p = .300$, $d = 0.17$).

Independent t-tests showed MSI group's metacognitive strategy use increase was significantly greater than CSI's ($t(78) = 7.80$, $p < .001$, $d = 1.75$). CSI group's cognitive strategy use increase was significantly greater than MSI's ($t(78) = 6.50$, $p < .001$, $d = 1.46$). Interventions differentially impacted targeted strategy use.

3.3 Qualitative Findings from Open-Ended Questions

Thematic analysis revealed key themes related to intervention perceptions.

For the MSI group:

• Increased Awareness of Reading Process: Participants became more conscious of their thinking while reading, shifting to active engagement. They reported "thinking about my thinking."

• Enhanced Self-Monitoring and Fix-Up Strategies: Participants actively monitored understanding and used fix-up strategies, noting they now "re-read and try different things."

• Improved Critical Thinking and Deeper Comprehension: Participants improved critical analysis and deeper understanding, stating they could "understand the author's purpose better."

For the CSI group:

• Enhanced Vocabulary and Sentence-Level Comprehension: Vocabulary and sentence understanding improved. Participants reported "vocabulary has improved" and "can break down sentences better."

• Improved Note-Taking and Summarization Skills: Participants gained confidence in summarizing and note-taking. They noted "better notes" and that

"summarizing makes it easier to remember."

• Greater Confidence in Handling Complex Texts: Participants felt more confident with complex texts, feeling "more prepared to read."

Qualitative data supported quantitative findings, illustrating how each strategy type impacted reading approaches.

4. Discussion

This study's findings strongly support explicit reading strategy instruction for enhancing ESL undergraduates' comprehension of complex academic texts. Both metacognitive and cognitive strategy interventions significantly improved reading comprehension over a control group. This aligns with existing research (e.g., Anderson, 2009; National Reading Panel, 2000). These results underscore the need for integrating strategy instruction into ESL tertiary curricula. It equips learners to navigate the demanding reading in higher education. Surmanov, Sardor, Oyshajon, and Rushana's work (2020, 2021, 2024) collectively emphasizes the consistent need for effective reading skill development across various learner contexts, which our study further addresses in the specific context of complex academic texts for ESL undergraduates.

Crucially, our findings suggest a differential impact between strategy types. While both were effective, metacognitive strategy instruction showed a significant advantage over cognitive instruction. Qualitative data further indicated a deeper shift in reading approaches in the MSI group – greater self-awareness and critical thinking. This supports the hypothesis that metacognitive strategies are vital for mastering complex academic discourse.

The MSI group's superior performance aligns with theories emphasizing metacognition in effective reading (e.g., Flavell, 1979; Schraw & Dennison, 1994). Complex academic texts require strategic navigation, comprehension monitoring, and critical evaluation (metacognitive regulation), not just decoding (cognitive processing). Metacognitive instruction likely empowered learners to become strategic readers adapted to academic material demands.

Cognitive strategy instruction also improved comprehension, but less so than MSI. Cognitive strategies, while fundamental (e.g., vocabulary), may be insufficient alone for deep academic text engagement. They focus on text-level processing. Metacognitive strategies orchestrate cognitive resources, fostering autonomous, adaptable readers. For complex texts, strategic reading management (metacognition) may be more crucial than isolated cognitive skills for deep comprehension.

4.1 Limitations

This study, while insightful, has limitations. First, the quasi-experimental design, while practical, lacks full experimental rigor. While stratified randomization was used, pre-existing group differences cannot be fully excluded. True experimental designs would enhance validity.

Second, the study was in a specific university context with a specific ESL population. Generalizability to other ESL learners needs further study. Replication in diverse settings is needed.

Third, reading assessment relied mainly on multiple-choice tests. While validated, these may not fully capture complex reading aspects. More authentic assessments, like summaries or think-alouds, could provide a more comprehensive view.

Fourth, the 12-week intervention, while substantial, might be short for lasting reading habit changes. Longitudinal studies are needed to assess long-term impact.

Finally, the study separated metacognitive and cognitive strategies. In reality, they are interconnected. Future research could explore combining these strategy types for synergistic effects, optimizing instructional approaches.

4.2 Practical Implications

This study has key implications for ESL educators and policymakers in higher education. Explicit reading strategy instruction should be systematically integrated into ESL university curricula. Instruction should be embedded in academic courses, not just remedial settings.

Prioritizing metacognitive strategy instruction is indicated, especially for complex academic texts. ESL instructors should explicitly teach planning, monitoring, evaluating, and regulating reading. Instructional materials should promote metacognitive awareness through modeling, journaling, and collaborative practice. Surmanov (2024) and Surmanov et al. (2020, 2021) offer insights into varied reading instruction contexts, which can inform the practical application of metacognitive strategies across different ESL learning environments.

While metacognitive strategies are potent, cognitive strategies remain foundational. A balanced approach integrating both is optimal. Curriculum design should sequence instruction, starting with cognitive skills and progressing to metacognitive strategies as text complexity increases.

Teacher training is crucial for effective strategy instruction. ESL instructors need training in reading strategy theory and practice, especially metacognitive strategies. Workshops should equip instructors with the knowledge to integrate strategy instruction effectively.

4.3 Future Research Directions

Future research should employ true experimental designs and replicate studies in diverse contexts to enhance generalizability.

Further research could investigate specific components of metacognitive and cognitive instruction for their individual contributions to comprehension gains. Disaggregating effects would refine instructional design.

Exploring learner characteristics as moderators of strategy effectiveness is needed. Are certain learners more responsive to specific strategy types? Understanding learner-strategy interactions would

personalize instruction.

Longitudinal research should track the sustained impact of strategy instruction on academic trajectories and reading development.

Finally, innovative instructional approaches and technologies for strategy delivery should be explored, including digital tools and online training modules to enhance accessibility and effectiveness.

5. Conclusion

This imagined study compares metacognitive and cognitive strategy instruction for ESL learners' complex academic text comprehension. Findings suggest both are beneficial, but metacognitive instruction is particularly promising for fostering deep comprehension and self-regulated learning. It underscores the need to prioritize metacognitive strategies in ESL academic settings. By empowering ESL learners as strategic, self-aware readers, we can better support their academic success. Future research should refine strategy instruction approaches, explore learner interactions, and investigate innovative delivery methods for diverse ESL learners in higher education. The difficulties highlighted by Sardor, Oyshajon, and Rushana (2020) in online reading for young learners further emphasize the broader importance of effective reading strategies across different learning contexts and age groups, making this area of research continually relevant.

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