Is there a Relationship between Reading Difficulties and Reading Strategies?

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ABSTRACT

Reading proficiency remains essential for undergraduates, yet many face challenges that affect comprehension and academic performance, especially in today's digital age. This quantitative study examined perceived reading difficulties, reading strategies, and their relationship among 119 undergraduates at a public Malaysian university. Using a survey adapted from Abeeleh & Al-Sobh (2021) and Amer et al. (2010), results showed self-perception issues such as believing peers are better at language and anxiety despite preparation were the most reported difficulties, followed by vocabulary barriers. Problem-solving strategies were the most frequently used, global strategies were rated moderately high, and support strategies were rated the least. Findings support Flavell's Metacognitive Theory, suggesting that greater difficulties prompt more strategic responses. Pedagogical implications include targeted vocabulary support, confidence-building, and balanced training in global, problem-solving, and support strategies to develop strategic, independent readers.

Keywords: reading difficulties, reading strategies, metacognition, undergraduates

INTRODUCTION

In the current digital age, the ability to read critically and strategically has become even more crucial than ever, as students must go through a huge number of printed and online texts of varying quality and complexity. Therefore, reading remains as a vital component for academic success for undergraduate students, serving as the primary gateway to acquiring and processing information across various disciplines. Grabe and Stoller (2020) emphasize that effective reading skills are essential not only for understanding academic content but also for developing higher-order thinking abilities such as analysis, evaluation, and synthesis. Being skilled in reading in higher education goes beyond decoding words; it requires metacognitive awareness, the application of appropriate reading strategies, and adaptability to different text types and formats (Afflerbach et al., 2008). For today's undergraduates who are exposed to learning in hybrid environments and engaging with multimedia resources, the ability to read efficiently, critically, and strategically is a requirement for academic success.

However, despite the importance of reading skill for undergraduates, many students are still facing challenges in navigating complex academic reading content. Reading difficulties brought upon from limited vocabulary, ineffective comprehension strategies, and struggles with online text navigation can significantly hinder academic engagement and performance (Rahmat et al., 2020). These challenges are intensified in the modern era, where interpreting and navigating online materials require additional cognitive and technological skills. To address such difficulties, the use of purposeful reading strategies, particularly metacognitive strategies, has been shown to enhance comprehension, self-monitoring, and adaptability across varied academic tasks (Afflerbach et al., 2008). By applying strategies such as previewing, questioning, summarizing, and using contextual clues, undergraduates can mitigate comprehension barriers and engage more effectively with disciplinary content. Understanding the interplay between reading difficulties and strategy use is therefore

essential for developing targeted instructional approaches that equip students with the skills needed to thrive in both traditional and digital academic landscapes.

Therefore, this study is done to explore reading difficulties and reading strategies among undergraduates. Specifically, this study is done to answer the following questions;

How do undergraduates perceive reading difficulties?

How do undergraduates perceive reading strategies?

Is there a relationship between reading difficulties and reading strategies among undergraduates?

LITERATURE REVIEW

Theoretical Framework of the Study

This research draws on Flavell's Metacognitive Theory (1979), which offers valuable insight into how students manage and control their own thinking while learning. Flavell describes metacognition as both the awareness of one's own cognitive processes and the ability to regulate them effectively. He identifies two main elements in this process: metacognitive knowledge and metacognitive regulation.

Metacognitive knowledge refers to a learner's understanding of how they learn, the nature of the task they face, and the strategies that might help them complete it. Metacognitive regulation, on the other hand, is about using that knowledge in practice as in planning how to approach a task, keeping track of progress, and making adjustments when things are not going as expected. Together, these elements determine how effectively a learner tackles academic challenges. In reading, metacognition plays a central role. Students who experience reading difficulties, such as slow decoding, poor comprehension, or trouble remembering what they have read and often struggle because they lack the awareness or the self-regulation needed to choose effective strategies. Without recognising when their understanding breaks down, they may continue reading passively, missing opportunities to pause, re-read, or apply comprehension strategies.

By contrast, skilled readers tend to use a range of reading strategies such as predicting content, summarising key points, asking themselves questions, and rereading complex parts of a text. These actions are deliberate and reflective, and they require constant monitoring of understanding, hallmarks of strong metacognitive regulation. Applying Flavell's framework, this study proposes that metacognition acts as the bridge between reading difficulties and reading strategies. Students with stronger metacognitive skills are more likely to recognise their challenges and respond by adjusting their reading behaviour, while those with weaker metacognitive abilities may not identify the problem or know how to respond effectively.

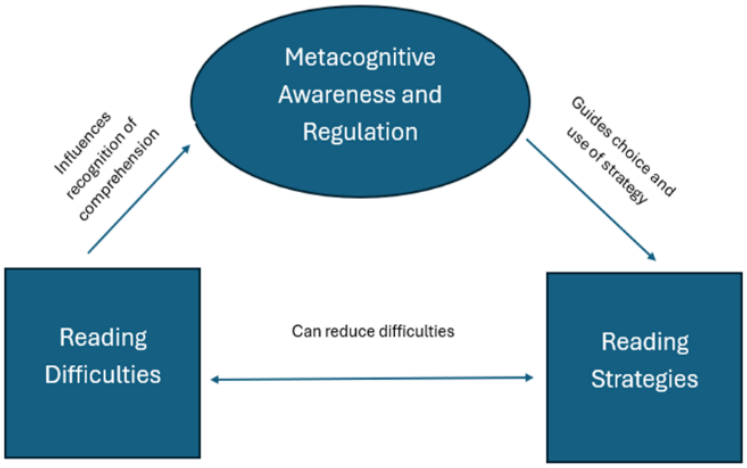

Figure 1: Conceptual framework of the study: Metacognitive awareness and regulation on reading difficulties and strategies.

Reading Difficulties

Based on Singh et al. (2023), Raja Yacob and Mohamad (2023) and, Afflerbach et al. (2008), reading difficulties can be categorized according to the following:

Language Limitations

Difficulties brought upon due to gaps in vocabulary and language interference, particularly among ESL leaners. The limited vocabularies and weak decoding skills lead to a reduction of fluency and comprehension.

Comprehension Gaps

Many undergraduates' students find themselves struggling with common issues such as main idea identification, making inferences and text organization.

Cognitive Constraints

Difficulties in comprehension caused by slow reading speed, poor working memory, and difficulty integrating information across sentences or paragraphs.

Metacognitive Weaknesses

Ineffective metacognitive reading strategies among undergraduates caused by the lack of comprehension skills and the ability to apply reading strategies effectively.

Context-Specific Barriers

Difficulties brought upon by the lack of background knowledge, technical vocabulary and the ability to adapt to

Reading Strategies

According to Amer et. al (2010), Syatriana (2024), and Abdullah and Ismail (2025), metacognitive reading strategies can be categorized into the followings:

Global Reading Strategies

Strategies that involve the planning, monitoring and setting up the stage for overall comprehension before and during the reading process. It emphasizes focusing on the 'big picture' of the text. This includes previewing the text, predicting content, identifying the purpose of the text, utilizing background knowledge and recognizing text organisation.

Problem-Solving Strategies

Strategies that involve managing difficulties in comprehension during the reading process by adapting reading behaviour. This includes re-reading unclear sentences, slowing down or speeding up the reading process, focusing on specific sections of the text, guessing the meaning of unknown words and breaking down complex sentences.

Support Reading Strategies

Strategies to provide external assistance to reading comprehension and information retention through supplemental tools or actions. This includes taking notes, highlighting key points, utilizing a dictionary or translation tool, maintaining focus by reading aloud or writing summaries.

Past Studies

Reading difficulties

Plethora of studies have examined what makes reading difficult for learners and how those difficulties tie into the ways students approach texts, especially in tertiary EFL/ESL settings. Rahman et al. (2023) investigated undergraduates perceived reading difficulties alongside their use of online reading strategies; 232 university students completed a 5-point Likert survey adapted from Abeeleh & Al-Sobh's (2021) reading-difficulty items. The study reported that students' belief of others being better than them and feeling anxious even when prepared for class often made academic texts more difficult, and that they compensate by relying on global and problem-solving strategies to refocus attention, while also using support strategies such as translation and consulting additional materials; the authors argue for explicit strategy instruction to scaffold online academic reading. Complementing this, Ali et al. (2022) explored comprehension problems among Pakistani university learners using a mixed-methods design (questionnaires with 64 students plus semi-structured interviews with nine English-department instructors). They found persistent obstacles such as complex/long sentences, weak grammar knowledge, limited vocabulary, and heavy dictionary dependence with implications that departments should strengthen grammar and vocabulary instruction, promote extensive reading beyond class, and train teachers to deploy targeted techniques (e.g., chunking and other comprehension supports) to reduce processing load during reading.

Building on this, Nguyen et al. (2024) examined both issues and assessing reading difficulties while also exploring strategy use among learners of Vietnamese as a foreign language. Their participants included 120 adult learners attending evening language schools. A mixed survey, adapted from Carrell, Pharis, and Liberto, captured both self-reported challenges (e.g., fast vocabulary influx, unfamiliar syntactic structures) and strategy deployment (e.g., summarizing, note-taking, metacognitive monitoring). Interviews supplemented quantitative results. Nguyen and Tran found a strong link between specific challenges like decoding unfamiliar scripts and dense phrasing, and strategic responses. Learners who recognized their difficulty in parsing structure were more likely to use summarizing and self-questioning tactics. The study's implications called for reading lessons that pair textual complexity with targeted strategy training, promoting metacognitive awareness so learners can notice difficulty and respond adaptively with appropriate strategies.

Reading Strategies

The study by Syatriana et al. (2024) is done to investigate the application and awareness of metacognitive reading strategies among students at Muhammadiyah University of Makassar and Samarkand State Institute of Foreign Language. The study aims to examine students' perception and comprehension of the 3 reading strategies; Global Reading, Problem-Solving and Support Reading strategies. A total of 141 participants were involved in the study and the data was collected through the Metacognitive Awareness of Reading Strategy Inventory (MARSI-R). The study has found that the participants were most familiar with problem-solving and global reading strategies but rely on support reading strategies the least. A similar study by Raja Yacob and Mohamad (2023) aimed to investigate the use of metacognitive online reading strategies by 44 undergraduates from a public university in Malaysia. A Likert-scale survey adapted from Amer et al. (2010) was used to collect data on the perceived use of metacognitive reading strategies in online reading. The results showed that all strategies under the metacognitive reading strategies are favoured by the students.

Another study by Deliany and Cahyono (2020) aimed to investigate EFL students' metacognitive reading strategies awareness and usage. The study also compares the awareness and usage of metacognitive reading strategies between male and female students. The participants consisted of 53 EFL students (20 male and 33 female) from the Universitas Negeri Malang and the data was collected through the MARSI-R inventory as well. The results showed that all students have a high metacognitive reading strategies awareness which indicated high metacognitive reading strategies usage overall. However, there is also no significant difference between male and female students indicating that gender does not play a role in metacognitive reading strategies awareness and usage. Another study by Aziz et. al aimed to investigate the perception on the usage of the metacognitive reading strategies among 109 undergraduates from a Malaysian university. The study had

found that global reading, problem-solving and support reading strategies were utilized during reading tasks, particularly global reading and problem-solving strategies. The result also shows a strong relationship between the strategies indicating that each strategy complements each other.

In conclusion, the studies examine undergraduate students' awareness and usage of metacognitive reading strategies. The findings suggest that students favour strategies that address comprehension breakdowns (problem-solving strategies) and help the overall reading process (global reading strategies) while underutilizing support reading strategies. However, the consistent high awareness across context shows that the students recognize the value of metacognitive reading strategies indicating that there is a room to encourage a more balanced usage of the three strategies together.

Conceptual Framework of the Study

Figure 2 shows the conceptual framework of the study. This study investigates the relationship between reading difficulties and reading strategies. Perceived fear of reading can affect learners negatively. This fear can hinder their understanding of the text they are reading (Rahmat et al., 2020). This study is rooted form Abeeleh & Al-Sobh's (2021) list of reading difficulties. They state that difficulties in reading can come from the text or from the reader. The reader may not have existing schema to understand the content of the test. This can arise if the reader is given a text that he/she has no background knowledge of. Next, the writer of the text may use vocabulary or language style that the reader is not familiar with. The reader himself/herself may have preconceived ideas about reading or about reading the text. Amer et al. (2010) suggested that academic readers can use several strategies to help them cope with reading difficulties. The first is global reading strategies refer to the strategies that makes the reader look at the text from a general point of view. This includes setting a purpose for reading, previewing the text, using contextual clues and also relating to previous knowledge. Next is problem-solving strategies where the reader reading actively with the text to resolve difficulties. This includes the reader using strategies like identifying the problem, rereading, looking for clues asking questions and also making connections in the text. Lastly, readers can use support strategies such as activating prior knowledge, making predictions or even summarizing the text.

In addition to that, this study also explores if there is a relationship between reading difficulties and the 3 reading strategies categories; global strategies, problem-solving strategies and support strategies.

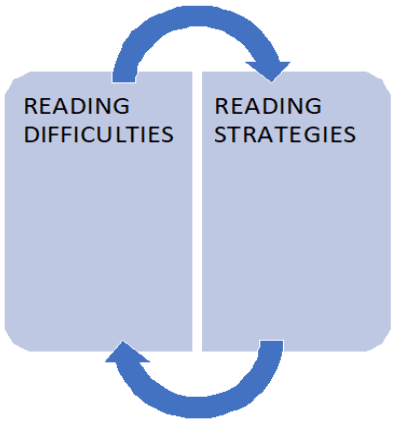

Figure 2 - Conceptual Framework of the Study

Relationship between Reading Difficulties and Reading Strategies

METHODOLOGY

This study is done to explore the relationship between reading difficulties and reading strategies using the quantitative method. The instrument used is a 5 Likert-scale survey. The categories used for the Likert scale; 1 is for Never, 2 is for Rarely, 3 is for Sometimes, 4 is for Very Often and 5 is for Always. This study replicates

the study by Abeeleh & Al-Sobh (2021) for reading difficulties and Amer et al. (2010) for reading strategies. Section A is for demographic profile. Section A has 4 items for demographic analysis. Section B has 14 items on reading difficulties and Section C has 31 items on reading strategies. Random sampling was used in order gain a suitable understanding of a large population. The survey was distributed via Google form link among the students of a public Malaysian university. The collection period lasted for two weeks starting from 3/6/25 until 13/6/25. In the end, a total of 119 responses were collected.

RESULTS AND DISCUSSION

Demographic analysis

The respondents were majority female (69%), with males representing only 31% of the sample. The group largely consists of younger undergraduates with the majority of participants (65%) were between 18 and 21 years old, while 35% were in the 22–25 age range. In terms of self-rated English reading proficiency, 66% of the respondents considered themselves to be average level, followed by 32% who rated themselves as good, and only a small minority (2%) identifying as poor readers. Reading preferences were evenly split, with 50% favouring physical materials such as books and magazines, and the other 50% preferring online resources, suggesting a balanced inclination towards both traditional and digital reading formats among the participants.

Perceived Reading Difficulties

This section presents the findings to answer research question 1- How do undergraduates perceive reading difficulties?

The mean analysis indicates that the highest difficulty among respondents was the perception that other students are better at language (M= 3.3, SD= 1.1), followed by feeling anxious in class even when prepared (M= 3.0, SD= 1.1) and finding text mapping tasks easy (M= 3.0, SD= 0.9), suggesting a mix of self-doubt and selective confidence in certain reading tasks. Moderate difficulties were noted in dealing with unfamiliar vocabulary (M= 2.9, SD= 0.7), feeling upset when comprehension fails (M= 2.9, SD= 1.1), and difficulty guessing word meanings (M= 2.8, SD= 0.8), reflecting vocabulary-related barriers. Lower means were observed for difficulties in recognizing the total meaning of a text (M= 2.4, SD= 0.8), translating word-by-word (M= 2.5, SD= 1.0), and feelings of uncertainty when reading in class (M= 2.3, SD= 1.0), while the lowest mean was for stress when reading in class (M= 1.8, SD= 0.9), indicating that reading-related stress is less prominent compared to self-perception and vocabulary challenges.

Perceived Reading Strategies

This section presents data to answer research question 2- How do undergraduates perceive reading strategies? In the context of this study, reading strategies are categorised into (i) global, (ii) problem-solving and (iii) support strategies.

Global Strategies

Data reveals that undergraduate learners generally adopt these approaches at a moderate to moderately high frequency when engaging with online texts. Across the 15 items, mean scores range between 3.4 and 3.8, suggesting that while most students employ global strategies, their use is not consistently strong across all areas. The highest mean score (M= 3.8, SD= 0.9) corresponds to where learners report attempting to predict the content of an online text before reading. This finding indicates that prediction serves as a common pre-reading tactic, likely helping students set expectations and activate prior knowledge. Several other strategies such as connecting new information with existing knowledge (M= 3.7, SD= 0.8), monitoring comprehension (M= 3.7, SD= 0.8), and using context clues (M= 3.7, SD= 0.9) also show relatively high adoption rates, implying that metacognitive monitoring plays a notable role in how students navigate texts.

In contrast, the strategies with the lowest means, namely paying attention to typographical cues (M= 3.4, SD= 1.0) and critically analysing information (M= 3.4, SD= 0.9), suggest that learners may not fully utilise

structural or evaluative techniques during reading. This pattern points to potential gaps in higher-order processing skills such as critical evaluation and the strategic use of formatting features to extract key information. Interestingly, although scanning to determine relevance before reading (M= 3.5, SD= 0.9) and evaluating a text prior to using its content (M= 3.5, SD= 0.8) also fall into the lower end of the range, these still indicate moderate engagement, suggesting that students are aware of these strategies but may lack consistent application.

Problem-Solving Strategies

Two items share the same highest mean of 4. Firstly, item 2 (M= 4, SD= 0.8) shows that the students reported they tried to get back on tract when they lost concentration. Next, item 6 (M= 4, SD=0.8) states that learners re-read the text if it became difficult to them. Item 3 (M=3.9, SD=0.8) reports that the learners adjusted their reading speed according to what they were reading. Item 5 (M=4, SD=0.8) states that the learners tried to visualize information to help them remember. The lowest mean of 3.5 for item 4 (SD=0.9) states that the learners stopped from time to time and think about what they were reading.

Support Strategies

The mean analysis shows that the highest mean was thinking about information in both English and their mother tongue while reading online (M= 3.9, SD= 1.0), suggesting a strong reliance on bilingual processing for comprehension. This was followed by the use of reference materials such as online dictionaries (M= 3.6, SD= 1.0), and reading aloud for clarity (M= 3.5, SD= 1.1), paraphrasing ideas in their own words (M= 3.5, SD= 0.9), and revisiting sections of text to find relationships among ideas (M= 3.5, SD= 0.9), indicating a high engagement with problem-solving and meaning-making processes. Moderate use was observed in asking self-questions while reading (M= 3.3, SD= 0.9) and note-taking (M = 3.0, SD = 1.0), with translation into the native language during reading also rated at 3.0 (SD= 1.2). The least common strategy was printing out texts for annotation (M= 2.6, SD= 1.0), suggesting a stronger preference for digital reading tools over physical text marking.

Relationship between Reading Difficulties and Reading Strategies

This section presents data to answer research question 3- Is there a relationship between reading difficulties and reading strategies among undergraduates? To determine if there is a significant association in the mean scores between reading difficulties and reading strategies among undergraduates, data is analysed using SPSS for correlations.

Data shows there is an association between reading difficulties and reading strategies. Correlation analysis shows that there is a high significant association between reading difficulties and reading strategies (r=.533**) and (p=.000). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between reading difficulties and reading strategies.

CONCLUSION

In short, the data analysis shows that there is a relationship between students' perception of reading difficulties and reading strategies. The following discussion will summarize the results based on each research question.

RQ 1 How do learners perceive reading difficulties among undergraduates?

Based on the analysis, self-perception and anxiety is perceived to be more relatable by undergraduates than stress or basic comprehension skills. The most prominent challenge was the belief that other students were better at language than themselves. This is followed by feeling anxious in class even when they are prepared for it. This indicates an issue of self-confidence. This result coincides with Rahman et al. (2023) which indicates that learners' perceived reading difficulties are more about how they see themselves as readers rather

than the complexity of the text itself. This is further supported when results show that issues linked to vocabulary and comprehension such as dealing with unfamiliar words, feeling upset when comprehension fails and struggling to guess the meaning of a word in context were rated moderately by the learners. This is in contrast to Ali et al. (2022) in which they found that vocabulary limitations, grammar weaknesses and sentence complexity were the most prominent challenge. This suggests that reading difficulties among learners may vary depending on their respective background as Rahman et al. (2023) investigated Malaysian students while Ali et al. (2022) investigated Pakistani students.

RQ 2 How do learners perceive reading strategies among undergraduates?

Based on the analysis, the undergraduates favour problem-solving strategies the most. The data reported a high frequency of strategies used to gain and maintain comprehension such as getting back on track when distracted, re-reading difficult sections, adjusting reading speed, and visualizing information. These findings suggest strong engagement in adaptive, in-the-moment strategies to overcome comprehension challenges, although pausing to reflect while reading is somewhat less common. Meanwhile, global reading strategies were also rated high but slightly lower than problem-solving strategies. Results show that students tend to rely on prediction, connecting new information to prior knowledge, monitoring comprehension, and using context clues. This indicates active metacognitive engagement during reading. On the other hand, support reading strategies, while seems to be the least favoured compared to the other two strategies, is still rated moderately high. Overall, these findings coincide with Syatriana et al. (2024) and Aziz et al. (2023) as the results show that students are most comfortable with strategies that directly tackle comprehension challenges (e.g., re-reading, adjusting speed, predicting content) and that facilitate overall understanding (e.g., connecting prior knowledge, monitoring comprehension). The lower use of support strategies such as note-taking, printing texts, and frequent self-questioning in the data mirrors the observation by Syatriana et al. (2024) which revealed that the strategy is less relied upon, even when students are aware of them. Similarly, the findings also align with Raja Yacob & Mohamad (2023) and Deliany & Cahyono (2020) in showing that metacognitive strategies in general are valued and used at moderate to high levels, with no evidence of complete neglect of any category. The difference lies in frequency of usage by the undergraduates. Like those in the other studies, the analysis demonstrates a preference for strategies that feel immediate and practical in reading contexts, while reflective or supplemental strategies receive less attention.

RQ 3 Is there a relationship between reading strategies and reading difficulties among undergraduates?

In summary, the analysis confirms that there is a relationship between reading difficulties and reading difficulties among undergraduates. The data shows that higher reading difficulties are linked to greater strategy use, with a clear preference for problem-solving and global approaches, while support strategies remain underutilized. This relationship suggests that students who encounter difficulties such as self-doubt about their language ability, vocabulary limitations, or difficulty maintaining focus are more likely to employ various strategies to support their comprehension. The earlier analysis shows that these strategies are most commonly problem-solving strategies (e.g., re-reading difficult parts, adjusting reading speed, regaining focus) and global strategies (e.g., predicting content, connecting information to prior knowledge, monitoring comprehension). However, despite the overall positive association, support strategies (e.g., note-taking, self-questioning, printing for annotation) remain less frequently used, indicating that while students respond to difficulties by increasing their strategic efforts, they tend to rely more on immediate, in-the-moment solutions rather than supplementary strategies that could enhance long-term comprehension and retention.

Theoretical and Conceptual Implications

The findings align with Flavell's Metacognitive Theory (1979) and the study's conceptual framework, showing that undergraduates' perceived reading difficulties are primarily reader-based, with self-perception and anxiety outweighing vocabulary or text complexity issues. This reflects the "person variable" of metacognitive knowledge, where beliefs about one's reading ability influence engagement with the task (Abeeleh & Al-Sobh, 2021). In response to these difficulties, students demonstrated metacognitive regulation through frequent use of problem-solving strategies (e.g., re-reading, adjusting speed) and global strategies (e.g., prediction, connecting

prior knowledge), while support strategies were used less often, suggesting underdeveloped planning and evaluation skills. The positive relationship between reading difficulties and strategy use confirms the framework's proposed link, but the imbalance in strategy type preference indicates that students favour immediate, in-the-moment solutions over supplemental approaches that could enhance long-term comprehension. These results highlight the importance of addressing both reader-based perceptions and the strategic breadth needed for effective academic reading.

Pedagogical Implications

Based on the findings, several pedagogical implications emerge that can guide instructional practices to better support undergraduates in overcoming reading difficulties while strengthening their strategic reading abilities.

Firstly, since vocabulary-related challenges and difficulties in extracting main and supporting ideas emerged as prominent concerns, reading instruction should place greater emphasis on vocabulary development in context. Teachers can integrate explicit vocabulary instruction with pre-reading activities such as semantic mapping, contextual guessing exercises, and morphological analysis to reduce learners' dependence on word-by-word translation. Additionally, scaffolding activities that train students to differentiate between main and supporting ideas such as guided summarization and targeted comprehension questions can strengthen their ability to process texts more effectively.

Secondly, the findings indicate that learners often experience self-doubt and anxiety, particularly when comparing themselves to peers. This suggests that pedagogical approaches should not only focus on skill development but also on building reading confidence. Incorporating collaborative reading tasks, peer discussions, and low-stakes comprehension checks can create a supportive classroom environment where students feel less pressure and more encouragement to engage with texts.

Thirdly, the strong adoption of certain global and problem-solving strategies such as predicting content, rereading when necessary, and adjusting reading speed indicates that learners already possess foundational metacognitive skills. Teachers can capitalize on these strengths by introducing higher-order strategies such as critical evaluation of sources, purposeful skimming and scanning, and strategic use of typographical cues, which the findings suggest are currently underutilized. This will help move learners beyond basic comprehension toward analytical and evaluative reading.

Finally, the positive correlation between reading difficulties and reading strategies implies that students who face more challenges tend to actively use strategies to cope. This relationship underscores the importance of explicit strategy training within reading courses. Teachers should model strategies in authentic reading contexts, provide opportunities for guided practice, and encourage reflective learning logs where students monitor and evaluate their own strategy use.

By implementing these pedagogical adjustments, educators can address both the cognitive and affective dimensions of reading, ultimately fostering more confident, strategic, and independent readers among undergraduates.

Suggestions for Future Research

Based on the findings, it would be valuable for future studies to explore new or underexamined contexts. For instance, researchers could examine whether the physiological symptoms of public speaking anxiety differ across cultural backgrounds, academic disciplines, or levels of study. Comparing groups such as STEM and humanities students, or domestic and international students, could reveal whether certain populations are more vulnerable or respond differently to anxiety-reduction interventions.

Next, future research needs to have methodological improvements, such as mixed-method or longitudinal designs. A longitudinal approach could track whether students' physiological anxiety responses decrease after repeated exposure to public speaking tasks over a semester. Mixed methods could combine quantitative

measures (e.g., heart rate monitoring) with qualitative interviews to capture both the intensity and personal experience of anxiety.

By implementing these pedagogical adjustments, educators can address both the cognitive and affective dimensions of reading, ultimately fostering more confident, strategic, and independent readers among undergraduates.

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