



INVESTIGATION ON RELATIONSHIP BETWEEN READING DIFFICULTIES AND ONLINE READING STRATEGIES

Asma' Ammar¹, Nur Hakimah Md Sallehuddin^{2*}, Fariz Azzuan Amat Suparia¹, Muhammad Syaffiq Mohammed¹, Nurul Atikah Rahman³, Noor Hanim Rahmat¹

¹Akademi Pengajian Bahasa, Universiti Teknologi MARA, Cawangan Selangor, 40450 Shah Alam, Malaysia

²Akademi Pengajian Bahasa, Universiti Teknologi MARA, Cawangan Negeri Sembilan, 70300 Seremban, Malaysia

³Centre for Foundation Studies, International Islamic University Malaysia, Gambang Campus, 26300 Gambang, Malaysia

* Corresponding Author Email: hakimah87@uitm.edu.my

Received: 8 August 2025 • Accepted: 12 April 2026 • Published: 30 April 2026

Abstract

Digital technology nowadays has transformed the access to engage with reading materials. The ability to navigate online reading effectively has become essential particularly in academics. However, students face distinct challenges through online reading that differs from traditional print reading method. This study aims to explore students' perceptions of online reading strategies and the relationship between reading difficulties in Arabic language. A quantitative research method was used to retrieve data from a total of two hundred (200) respondents who were selected through a purposive sampling method from a public university in Malaysia. Using an online 5 Likert-scale survey, the survey consists of five (5) sections: Demographic, reading difficulties and three reading strategies (global strategies, problem-solving and social support strategies) with a total of forty eight (48) items. The results revealed that there is no relationship between reading difficulties and online reading strategies. These findings indicate different outcomes from the other research which implicate the study area for Arabic language in reading difficulties and online reading strategies that need further investigation. Furthermore, the study suggests the importance of considering additional variables such as, self-regulated learning, motivation, and technological competence in understanding students' online reading behavior. Future research is recommended to employ mixed-method and longitudinal approaches to better understand the development and application of online strategies among students over time in foreign language contexts.

Keywords: *Online Reading Strategies; Reading Difficulties; Global Strategies; Problem Solving Strategies; Support Strategies; Arabic Language.*

Cite as: Ammar, A., Md Sallehuddin, N. H., Amat Suparia, F. A., Mohammed, M. S., Rahman, N. A. & Rahmat, N. H. (2026). An Investigation of Relationship Between Reading Difficulties and Online Reading Strategies. *Asian People Journal*, 9(1), 88-103.

INTRODUCTION

Learning a language requires four skills: reading, listening, speaking, and writing. Reading is one of the fundamental cognitive skills and an essential tool for communication, retrieval of information, and attainment of new knowledge (Dillah et al., 2023). The development of digital technology nowadays has shifted the nature of reading from traditional print media to a digital platform known as online reading. Habok et al. (2024) stated that this transition introduces multimedia content and complexities in online reading including non-linear text structures which bring new challenges for students to gain knowledge and information. Moreover, based on increasing usage trends of the internet, online reading has become an essential aid and major source for students that provides various information with authentic language input (Amer et al., 2010).

Reading difficulties are displayed in various forms such as poor decoding abilities, comprehension challenges, or a combination of both. These challenges can hinder a student's academic performance, particularly in higher education where reading skills are important (Soares et al., 2023). Among the challenges encountered by the students in reading are limited vocabulary, cognitive processing issues, and lack of phonological awareness which affected students' engagement with written text (Gedik & Akyol, 2022). In addition, another factor that affects the use of online reading strategies is the student's attitude toward the native language which indirectly influences reading skills (Habok et al., 2024). In addition, Norman (2023), stated that the transition to online reading presents new challenges that require specific strategies to support comprehension and critical engagement. Thus, suitable online reading strategies are needed to help and support students in enhancing their online reading skills to understand and precise information better.

Online reading strategies refer to specific methods used by students to facilitate understanding and information processes from digital text. According to (Amer et al., 2010), these strategies can be divided into several categories, including global reading strategies, problem-solving strategies, and support strategies. This has been discussed for the past few years as the transition of the reading landscape to online reading concerns the researcher. Various studies have been done by (Dillah et al., 2023; Amer et al., 2010; Rahim et al., 2023 & Rahman et al., 2023) to explore the effectiveness of online reading strategies. Studies have revealed that the effective application of these strategies significantly helps to improve reading comprehension outcomes among students. Moreover, the importance of equipping students with technology and various online reading strategies enhances students in adapting to today's learning environment.

It is widely acknowledged that acquiring complex cognitive skills such as reading requires significant effort and effective instructional strategies. In an ideal learning environment, students would effectively use online reading strategies to improve comprehension, expand vocabulary, and understand the cultural context of the Arabic language. Anderson (2003) explores the importance of interaction in online learning environments, emphasizing that digital platforms enable students to access resources and engage in self-directed learning. His study suggests that an effective learning experience integrates both online and traditional methods, fostering independent learning skills. In the context of language acquisition, such a blended approach could help students develop confidence and improve reading skills. However, for Malaysian students studying Arabic as a third language, reading comprehension remains a significant challenge due to various pedagogical and linguistic factors.

Koda (2007) points out that successful comprehension depends heavily on knowledge of individual word meanings. This highlights the crucial role of vocabulary, background knowledge and grammatical understanding as key factors influencing reading comprehension. Without a strong foundation in these areas, students may struggle to grasp the meaning of complex texts, especially if they encounter unfamiliar words. According to Al-Jarf (2007), metacognitive reading strategies and techniques can be taught to students during reading instruction. Web-based reading materials and activities may also be used as a supplement to enhance the learning experience.

It is emphasized that students face significant challenges in mastering word identification and reading comprehension skills, which results in limited vocabulary and a lack of comprehension abilities. These challenges are further intensified by the limitations of traditional educational approaches and the lack of exposure to effective reading strategies within the curriculum.

Students who are unable to read and comprehend effectively face significant challenges throughout their academic journey and beyond (Al-Jarrah & Ismail, 2018). The persistent impact of reading challenges on students' academic performance highlights the need for effective strategies that can improve their literacy skills. Hew and Brush (2007) further note that the integration of technology into education often faces numerous barriers, including limited resources, insufficient training, and resistance to change. These obstacles prevent the effective use of online tools and strategies that could enhance reading skills and overall academic success. Online platforms, though promising, require proper guidance and structure to truly benefit students.

Rahmat et al. (2021) examine the relationship between reading difficulties and online reading strategies, pointing out that many students face challenges in reading comprehension because of insufficient strategies and limited vocabulary. The study stresses the significance of using targeted reading strategies to overcome these challenges, indicating that students are often not adequately equipped to adapt their traditional reading skills to online environments. This lack of preparedness highlights the necessity for further research into the link between reading difficulties and online reading strategies to enhance students' reading comprehension and overall academic performance.

Generally, reading comprehension requires a strong foundation in vocabulary, grammar, and background knowledge. Many students, especially those learning Arabic as a third language, face difficulties due to ineffective strategies and limited exposure to proper reading techniques. While online platforms offer potential solutions, issues such as lack of guidance, insufficient training, and limited resources prevent their full use. Addressing these challenges through targeted reading strategies and better digital integration is important for improving students' reading skills and academic success. This study aims to explore the connection between reading difficulties and online reading strategies to find effective ways to help language learners improve their comprehension.

The objective of this study is to explore perception of learners on reading difficulties and online reading strategies. Specifically, this study is done to answer these three following questions i) How do learners perceive their reading difficulties?, How do learners perceive their online reading strategies? and the last question is there a relationship between reading difficulties and online reading strategies?

LITERATURE REVIEW

Theoretical framework

Reading difficulties

Reading is an active cognitive activity wherein the reader's brain decodes letters and generates meaning based on prior knowledge (Khaobaht & Hamiddin, 2024). It is a process wherein readers must concentrate and pay attention to comprehend the ideas and substance articulated by authors (Jala, 2020). Many students, however, encounter challenges in reading and find it difficult to acquire the necessary abilities (Dillah et al., 2023). Abbas (2021) classified reading difficulties into internal variables, such as difficulties with lengthy sentences, insufficient background knowledge, attention span concerns, and external factors, including indifference in the reading subject, limited vocabulary and motivational deficits.

Abd Rahman and Mohamad (2023) identify limited vocabulary as a challenge for students, which, according to Meganathan (2019), states that students prefer to rely entirely on translations when reading in a foreign language. Kim & Kim (2022) emphasized that foreign language students who have limited or basic vocabulary knowledge are likely to face difficulties in reading, as vocabulary is a fundamental component of the reading process. According to Dillah et al. (2023), students frequently experience feelings of inadequacy and lowered self-assurance when they compare their proficiency in reading foreign language texts to that of their peers. Additionally, Waring and Vu (2020) found that foreign language readers who experience reading difficulties are unable to stay motivated to read in their native language because of the anxiety and frustration that result from their inability to understand texts. Many factors contribute to reading difficulty in foreign languages; yet, this issue must be addressed by students, as reading is one of the primary language skills to be mastered. Consequently, students must implement suitable strategies to improve foreign language acquisition via reading.

Online reading strategies

Aebersold and Field (1997) define reading strategies as the cognitive processes and behaviors that readers employ to effectively extract meaning from a text. According to Grabe and Stoller (2011), reading strategies are abilities that are potentially open to conscious reflection and reflect a reader's intention to address a problem or a specific goal while reading. It is implemented to ascertain the significance of exploring texts. Additionally, students are encouraged to acquire information through a variety of reading strategies (Driscoll, 2005).

As stated by Hsieh and Dwyer (2009), if students are given a variety of learning opportunities throughout the reading comprehension process, they can employ reading strategies in online learning environments. Online reading strategies, as defined by Behalova (2010), are the intentional, conscious activities and behavior of students when they are reading online material. While some students prefer to use computers and mobile devices as learning tools in the language classroom, Auer (2014) claims that online reading materials are being used more and more in language classrooms. Afflerbach and Cho (2010) verified that offline reading strategies are essential for online reading; however, they are implemented in a more complex manner. Therefore, Li (2020) developed an online reading strategy questionnaire, Second Language Online Reading Strategies Inventory (SLORSI), and characterized reading strategy by three dimensions: cognitive, metacognitive and social.

Furthermore, Sheorey and Mokhtari (2001) categorized online reading strategies into three categories: global, problem-solving and social. Students can monitor their reading, evaluate content, verify its appropriateness and observe the characteristics of the text with the assistance of global strategies. While problem-solving strategies are actions that students take when working directly with the content, particularly when the content becomes challenging. Students employ support strategies to enhance their comprehension, such as translating from their native language to the target language or utilizing a dictionary. Additionally, Huang (2013) discovered that students implemented three primary strategies during their online reading activities: global, problem-solving and support strategies, in addition to socio-affective strategies. Raja Nur Raja Yacob and Mohamad (2023) also emphasize that students prefer to employ problem-solving strategies to improve their comprehension of the online text. In summary, students should employ a variety of reading strategies to enhance their comprehension of a text when they confront difficulties during the reading process (Par, 2020).

Past studies on reading difficulties

Many research have been undertaken to investigate the problems of reading in second and foreign language students. The current study chose some of them based on the goal of the investigation. The study began by providing a related study that dealt with reading issues in second language learning, followed by studies on foreign language learning.

A study was conducted to ascertain the strategies that pre-university ESL students employ when confronted with challenging online reading assignments, as well as the online reading difficulties they encounter. Data was collected from a total of 207 respondents who were selected through a purposive sampling method from a Centre of Foundation Studies at a selected public university in Malaysia using a quantitative method. Data was collected using an online five-point Likert scale survey that included five sections and a total of 48 items. The questionnaire was modified from Abeeleh and Al-Sobh (2021) and Amer, AL Barwani and Ibrahim (2010), and the IBM SPSS (Statistical Package for the Social Sciences) was employed for the analysis. The results indicate that reading difficulties have been induced by a sense of inferiority, low self-confidence, inadequate language proficiency, and feelings of anxiety and frustration regarding their inability to comprehend online materials in English (Dillah et al., 2023).

Currently, there are few studies related to reading difficulties in foreign language learning. Al-Jarrah & Ismail (2018) aimed to look into reading comprehension difficulties among EFL students in higher education institutions. The study used a quantitative method, with 100 out of 281 Arab students from Universiti Sultan Zainal Abidin (UniSZA) and Universiti Malaysia Terengganu (UMT) selected to respond to the questions. The test results were analyzed using cross tabulation. The test results suggested that the biggest challenge experienced by Arab EFL students is the inability to recognize the types of text. Additionally, a study was conducted to examine the reading comprehension challenges that students at Ajloun National University face. Additionally, the investigation endeavors to offer a more comprehensive understanding of the variables that influence students' reading comprehension. The researchers employed a questionnaire that encompasses general statements regarding the primary challenges that students encounter in reading comprehension for this purpose. The study included 20 EFL students (10 males and 10 females) from the Department of English Language and Literature at Ajloun National University. The findings of the study suggest that students have a high estimation of specific reading comprehension challenges they face as a consequence of the complexity of the texts, anxiety, and word recognition (decoding) (Waleed et al., 2021).

Furthermore, Al-zu'bi (2024) sought to identify the reading challenges encountered by first-year students studying English as a foreign language at various institutions within Al-Balqa Applied University (BU) and propose solutions to these challenges. The study sample comprises 400 first-year students studying English at several institutions within BU. The researcher developed a scale as a tool for the investigation. This is a questionnaire of 22 items regarding the challenges and issues associated with reading English. A 5-point Likert Scale was employed. The findings indicate that first-year students face multiple challenges in their English language acquisition, with insufficient time for reading practice, difficulty in retaining and summarizing information, and an inability to anticipate text progression identified as the three most significant obstacles. Furthermore, it was noted that certain English lecturers fail to implement appropriate methods and processes in reading instruction, potentially obstructing students' advancement.

The analysed form the past researches show that second- and foreign-language students struggle with English reading. Low self-confidence, anxiety, and linguistic proficiency hinder comprehension. Studies show that ESL students struggle with online reading due to inferiority and dissatisfaction, while EFL students struggle with text identification, complexity, and decoding. Insufficient reading practice, retention issues, and inefficient instructional methods further impair comprehension. To improve students reading ability and confidence, these issues require focused measures like better instruction, more reading practice, and supportive learning settings.

Past studies on online reading strategies

Numerous studies have been conducted to examine online reading strategies. The current study selected a few of them in accordance with the investigation's objective, which is to examine foreign language learning and metacognitive strategies, including global strategies, problem-solving strategies, and support strategies.

A research study was conducted to examine the impact of online reading strategies on comprehension among EFL students. In order to achieve the objectives of this investigation, English Reading Online was developed as a web-based reading program. A total of thirty applied English majors were assigned to either a high or low group based on their proficiency levels. They were required to read four authentic online texts, two of which were suitable for their level of proficiency and two of which were more challenging. The results of the data analysis indicated that the use of support strategies was the predominant strategy and was responsible for the majority of the comprehension gains. However, an exclusive reliance on support strategies was unable to accurately predict the increase in scores on main ideas and details when the students were reading more challenging texts. For the most part, the implementation of global strategies significantly enhanced comprehension, particularly among students with low proficiency (Huang et al., 2009).

Additionally, Mukhlif and Amir (2017) conducted a study on the utilisation of metacognitive online reading strategies by Iraqi students. The research aims to address the following research questions: (i) When perusing online academic text, what are the metacognitive online reading strategies of fourth-year undergraduate students in Iraq? (ii) What are the challenges that fourth-year undergraduates in Iraq encounter when they read online academic texts? The study employed a quantitative approach, administering questionnaires to 50 fourth-year students at Al-Salam University College in Baghdad, Iraq. Students' responses to metacognitive online reading strategies were evaluated in a variety of ways. Some of the methods used to improve the reading abilities of English as a foreign language (EFL) students from Iraq include the adoption of online dictionaries, the reading of e-books, and the reading of online journal articles. The researcher examined the utilisation of metacognitive reading strategies by students and the issues they encountered. The students demonstrated that problem-solving reading strategies were the most frequently employed strategy, followed by support reading strategies and global reading strategies as indicated by the quantitative analysis of their responses to the SORS questionnaire. The students are able to enhance their reading abilities through the utilisation of all of these identified themes.

In order to investigate the utilisation of metacognitive online reading strategies by 147 first-year student English instructors, an additional comparable investigation was implemented: the Online Survey of Reading Strategies (OSORS). Results indicated that student teachers employed problem-solving reading strategies and support, while global reading strategies were utilised to a lesser extent (Yasin Öztürk, 2018).

A mixed-methods study was also undertaken to evaluate Iranian EFL students' metacognitive online reading strategies and CT skills, as well as their possible relationship in academic texts. This study included 80 Iranian EFL university students from Shahrekord University who completed Pookcharoen's (2009) Online Survey of Reading Strategies and Facione, Facione, Blohm, and Giancarlo's (2002) California Critical Thinking Skills Test. In the follow-up, 10 Iranian EFL university students did think-aloud online reading assignments to investigate metacognitive online reading strategies. EFL university students preferred problem-solving tactics above global and support reading strategies, according to descriptive data (Marboot et al., 2020).

A descriptive study by Rianto (2021) examined metacognitive online reading techniques and learning conditions before and during the COVID-19 pandemic. There were 244 Indonesian EFL students studying English at Borneo Tarakan University. Online Survey of Reading Strategies (OSORS) data were obtained using Google Form. Data were descriptively and quantitatively analysed. Results showed that support methods were implemented more than global tactics before the epidemic. Support and problem-solving techniques predominated during the epidemic, while global tactics were least used. Students used the overall and category techniques differently, while some individual strategies were similar. The students used the tactics moderately before and heavily during the pandemic. These findings suggest that EFL students need metacognition to comprehend online reading. Involve students more in strategy use, especially those that were similar before and after the COVID-19 pandemic.

In summary, the most frequently employed strategies were problem-solving strategies, which help students overcome specific literacy challenges, as indicated by common findings. Furthermore, comprehension was determined to be significantly enhanced by the implementation of support strategies. However, global strategies, which involve more comprehensive reading strategies, were implemented less frequently. Notably, previous studies have focused largely on learning English as a foreign language, which indicates that there is still much to be explored in the study of foreign language learning in other languages.

Conceptual framework

Is there a relationship between reading difficulties and online reading strategies? This study investigates that relationship. The conceptual framework is presented in figure 1. This study explores what learners perceive in reading difficulties. It also looks at how learners perceive their online reading strategies. Past findings found that online reading can give learners negative online experience (Rahmat et.al, 2021). This is because sometimes facing difficulties deter learners from continuing the reading task. According to Abeeleh & Al-Sobh (2021), reading difficulties can come from the text, or even the reader's attitude. Amer et.al (2010) suggested that readers use some reading strategies to make online reading pleasant. The strategies are global strategies, problem-solving strategies and support strategies.



Figure 1: Conceptual framework of the study-relationship between reading difficulties and online reading strategies

METHODOLOGY

This study employed a quantitative survey methodology to explore factors related to undergraduate students learning motivation focusing on reading difficulties and reading strategies. Total of 200 undergraduates students in higher institutions selected using purposive sampling were participated in this study. The instrument used is a 5 Likert-scale survey and is rooted from Abeeleh and Al-Sobh (2021) on reading comprehension problems and Amer, Al Barwani, and Ibrahim (2010) on readers' on perceived use of online reading strategies to reveal the variables in Table 1.

The questionnaire consisted five section. Section A gather the demographic information while section B contained 14 items on measuring reading difficulties. The other section, C, D, and E included 17 items on global strategies, 8 items on problem-solving strategies which used to measured the reading strategies. In total, the instrument contained 48 items.

Table 1: Reliability of Survey

Section	Category	Strategy	No. of Item	Total Items	Cronbach Alpha
B	Reading Difficulties (Abeeleh & Al-Sobh, 2021)			14	.891
C	Reading Strategies (Amer et al.,2010)	Global	17	34	.944
		Problem-Solving	8		
		Support	9		
				48	.927

Table 1 shows the reliability of the survey using Cronbach alpha. The analysis shows the reading difficulties portray the highest consistency (.891). As for Reading Difficulties, comprising global, problem-solving, and support strategies demonstrate good reliability (.944). The overall reliability of all 48 items is .927; thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

RESULT AND DISCUSSION

Findings for demographic profile

Table 2 displays the percentage total of 200 respondents who participated in this study according to gender. It shows that the percentage distribution of gender was 69% for female students and 31% for male students collected using a purposive sampling method.

Table 2: Percentage for Q1 (gender)

No	Item	Percentage
1	Male	31%
2	Female	69%

Based on Table 3, Social Sciences shows the highest percentage of participation from the total amount of students who participated across three different disciplines with 46% (92 students). This is followed by Science and Technology students with 34% (68 students), and the least number of students involved in this study are from Business Management with 20% equivalent to 40 students.

Table 3: Percentage for Q2 (Discipline)

No	Item	Percentage
1	Science & Technology	34%
2	Social Sciences	46%
3	Business Management	20%

Table 4 illustrates three different levels of Arabic courses taken by the students who participated in this study. Level 2 Arabic course presents the highest amount of participation which involved 90 students (45%). While Arabic level 1 and 3 students were slightly different with 28% students from level 3 and 27% from level 1.

Table 4: Percentage for Q3 (Arabic Course)

No	Item	Percentage
1	Arabic Level 1	27%
2	Arabic Level 2	45%
3	Arabic Level 3	28%

As shown in Table 5, a comparison of the percentages indicates that the majority of 200 students 81% (162 students) in this study have basic Arabic. In contrast, 19% (38) of the students did not have basic Arabic while taking the Arabic course.

Table 5: Percentage for Q4-Basic Arabic

No	Item	Percentage
1	Yes	81%
2	No	19%

Table 6 presents the students categorized into three (3) different levels of self-rating reading proficiency. Most of the students, approximately 66% rated themselves at an average level. This is followed by good self-ratings 18 % and only 16%of students rated themselves as poor in reading proficiency.

Table 6: Percentage for Q5-Self-Rating Reading Proficiency.

No	Item	Percentage
1	Poor	16%
2	Average	66%
3	Good	18%

As for reading habits among the students in a week, Table 7 presents the time spent for reading Arabic books. Majority of students (67%) read Arabic books for less than 1 hour every week. Another 21% of students spent between 2 – 6 hours per week and 10% of students various types of Arabic books in a week. Only 2% of students committed to read for more than 7 hours throughout the week.

Table 7: Percentage for Q6-Number of Books

No	Item	Percentage
1	I read many types of Arabic books regularly throughout the week	10%
2	I read less than 1 hour per week	67%
3	I read less than 2 - 6 hours per week	21%
4	I read less than 7 hours per week	2%

Findings for reading difficulties

This section presents data to answer research question 1- How do learners perceive their reading difficulties?. Table 8 presents the analysis of students' reading difficulties in the context of learning Arabic as a third language. The highest mean score of 3.8 was found for Item RDQ7, indicating that students often resort to translating word by word when reading. This suggests that students frequently use basic translation strategies to understand the text.

Table 8: Mean for reading difficulties

Item	Mean	SD
RDQ1I faced a problem in figuring out the meanings of some new words in the reading text	3.6	.82473
RDQ2I faced a problem in identifying the aim behind reading comprehension	3.3	.86495
RDQ3I faced difficulty in guessing the meanings of some new words	3.5	.87391
RDQ4I faced a problem in distinguishing main ideas from supporting ideas in the reading text	3.4	.83815
RDQ5I faced difficulty in extracting main and detailed ideas in the text	3.3	.79936
RDQ6I faced difficulty in recognizing the total meaning of the text	3.3	.93818
RDQ7I usually translate word by word when I am reading	3.8	1.05982
RDQ8I feel stressed when reading a text in English in the classroom.	2.5	1.14294
RDQ9I never feel quite sure of myself when I am reading in the classroom.	3	1.09342
RDQ10I keep thinking that the other students are better at language than I am.	3.6	1.11071
RDQ11Even if I am well prepared for language class, I feel anxious about it.	3.3	1.61373
RDQ12I feel upset when I don't understand what I read in English	3.4	1.15301
RDQ13I faced difficulty in summarizing the main ideas of the text	3.3	.86980
RDQ14I don't face difficulty with reference questions I find text mapping an easy task for me	3	.88787

The second highest mean, 3.6, was observed in both Item RDQ1 and RDQ10, reflecting that students experience difficulty with unfamiliar vocabulary and often feel that their peers are better at language. The lowest mean, 2.5, was found in Item RDQ8, where students reported feeling stressed when reading a text in Arabic in the classroom. This shows relatively less stress or anxiety about reading in Arabic compared to other reading challenges. Overall, the findings highlight that students face challenges with vocabulary, self-confidence, and translating texts, while stress related to reading in Arabic is less noticeable.

Findings for reading strategies

This section presents data to answer research question 2- How do learners perceive their online reading strategies? In the context of this study, this is measured by (i) global strategies, (ii) problem-solving strategies and (iii) support strategies. The Table 9 presents the mean values of students' responses to global strategies used in online reading. The data suggests that the strategies with the highest scores, each with a mean of 3.7, are paying closer attention when online text becomes challenging (GSQ7), utilizing tables, figures and pictures to enhance comprehension (GSQ8), employing context clues for better comprehension (GSQ9), verifying comprehension when encountering new information (GSQ12) and attempting to predict the content of the text (GSQ13).

In contrast, strategies such as reading with a purpose (GSQ1) and deciding what to read extensively or ignore (GSQ6) scored lower (mean = 3.3), suggesting a less purposeful approach to these aspects. Furthermore, strategies that students employ to a modest level include assessing the content's coherence with their reading objectives (GSQ4) and identifying essential information via typographical features (GSQ10), with mean scores of 3.5 and 3.6, respectively.

Table 9: Mean for (i) Global Strategies

Item	Mean	SD
GSQ1I have a purpose in mind when I read online	3.3	.79936
GSQ 2I think about what I know to help me understand what I read on-line	3.6	.82935
GSQ 3I take an overall view of the on-line text to see what it is about before reading it	3.6	.82371
GSQ 4I think about whether the content of the on-line text fits my reading purpose	3.5	.80199
GSQ 5I review the on-line text first by noting its characteristics like length andorganisation	3.4	.72761
GSQ 6When reading on-line, I decide what to read thoroughly and what to ignore	3.3	.98902
GSQ 7When on-line text becomes difficult, I pay closer attention to what I am reading	3.7	.83972
GSQ 8I use tables, figures, and pictures in the on-line text to increase my Understanding	3.7	.93119
GSQ9I use context clues to help me better understand what I am reading online	3.7	.85288
GSQ10I use typographical features like boldface and italics to identify key information.	3.5	.91876
GSQ11I critically analyse and evaluate the information presented in the on-line text	3.5	.83839
GSQ12 When reading on-line, I check my understanding when I come across new information	3.7	.79532
GSQ13I try to guess what the content of the on-line text is about when I read.	3.7	.77258
GSQ14I check to see if my guesses about the on-line text are right or wrong	3.7	.78936
GSQ15I scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.	3.6	.77336
GSQ16I critically evaluate the on-line text before choosing to use its information	3.5	.78558
GSQ17 When reading on-line, I look for sites that cover both sides of an issue.	3.5	.85602

Table 10 displays the mean value of the problem-solving strategies in online reading. PSSQ2 and PSSQ6 are the strategies that received the highest ratings, with a mean of 4.0. These strategies involve trying to re-establish focus when concentration is lost and re-reading difficult text to improve comprehension. This suggests that readers are actively involved in the process of monitoring and regulating their comprehension. In close succession, strategies such as reading with care (PSSQ1), modifying reading speed (PSSQ3), and visualising information (PSSQ5) also received high mean score which are 3.9,3.8, and 3.8 respectively. Thus, indicating that readers are cognisant of their information processing mechanisms, while the ability to distinguish between fact and opinion (PSSQ8) scored the lowest with a mean score of 3.4.

Table 10: Mean for (ii) Problem Solving Strategies

Item	Mean	SD
PSSQ1I read slowly and carefully to make sure I understand what I am reading on-line.	3.9	.83839
PSSQ2 I try to get back on track when I lose concentration	4	.77596
PSSQ3 I adjust my reading speed according to what I am reading on-line	3.8	.81067
PSSQ4 I stop from time to time and think about what I am reading on-line	3.6	.84657
PSSQ5I try to picture or visualise information to help remember what I read on-line	3.8	.87045
PSSQ6 When on-line text becomes difficult, I re-read it to increase my Understanding	4	.88534

PSSQ7 When I read on-line, I guess the meaning of unknown words or phrases	3.7	.84590
PSSQ8 I can distinguish between fact and opinion in on-line texts	3.4	.87115

Table 11 reveals the mean score for the support strategies in online reading. The strategies that received the highest ratings, each with a mean of 3.8, are as follows: taking notes while reading (SSQ1), utilising reference materials such as online dictionaries (SSQ4), and pondering in both Arabic and their native language (SSQ9). This implies that students actively interact with the content by employing external aids and multilingual processing. With the similar mean score (3.6), reading aloud (SSQ2) and paraphrasing are also the commonly used strategies. Printing and marking hard copies (SSQ3) with a mean score of 3.2 is the least utilised strategy which may be attributed to the digital character of online reading.

Table 11: Mean for (iii) Support Strategies

Item	Mean	SD
SSQ1 I take notes while reading on-line to help me understand what I read	3.8	.88192
SSQ2 When on-line text becomes difficult, I read aloud to help me understand what I read	3.6	.82664
SSQ3 I print out a hard copy of the on-line text then underline or circle information to help me remember it.	3.2	.106425
SSQ4 I use reference materials (e.g. an on-line dictionary) to help me understand what read on-line.	3.8	.94704
SSQ5 I paraphrase (restate ideas in my own words) to better understand what I read on-line.	3.6	.96521
SSQ6 I go back and forth in the on-line text to find relationships among ideas in It	3.5	.80869
SSQ7 I ask myself questions I like to have answered in the on-line text	3.5	.83870
SSQ8 When reading on-line, I translate from Arabic into my native language	3.5	.82546
SSQ9 When reading on-line, I think about information in both Arabic and my mother tongue	3.8	.91195

Findings for relationship between reading difficulties and online reading strategies

This section presents data to answer research question 3- Is there a relationship between reading difficulties and online reading strategies?. To determine if there is a significant association in the mean scores between reading difficulties and online reading strategies, data is analysed using SPSS for correlations. Result is presented separately in Table 12.

Table 12: Correlation between reading difficulties and online reading strategies correlations

		Reading Difficulties	Reading Strategies
Reading Difficulties	Pearson Correlation	1	.130
	Sig. (2-tailed)		.066
	N	200	200
Reading Strategies	Pearson Correlation	.130	1
	Sig. (2-tailed)	.066	
	N	200	200

Table 12 shows there is no association between reading difficulties and online reading strategies. Correlation analysis shows that there is no significant association between reading difficulties and online reading strategies ($r=.130$) 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 no relationship between reading difficulties and online reading strategies.

Several pedagogical implications and further research can be suggested from the findings of this study. In order to encounter vocabulary deficits and reading difficulties, educators were suggested to promote students' usage of digital tools aligned with the shift to an online reading environment. Improving students' metacognitive awareness through suitable approaches such as critical thinking skills and goal setting for students' understanding is essential to enhancing online reading skills. Furthermore, blending traditional methods like annotation with digital methods helps to support the digital learning environment and at the same time motivates students and increases engagement.

Future studies could explore the impact of blending the traditional method with digital approaches in recent learning environments, investigate the role of advanced technology such as Artificial Intelligence (AI) in enhancing students' online learning, specifically online reading. Moreover, investigation on cross-cultural comparisons and critical thinking skill development through innovative digital methods for example gamification and the influence of emotion would provide valuable insights. Last but not least, exploring relationships between reading difficulties and online reading across students' proficiency levels and language skills could help to refine the existing approaches and improve learning outcomes.

CONCLUSION

In conclusion, the findings show that students' reading difficulties are mainly linked to translation strategies, vocabulary, and self-confidence. Word-by-word translation is the most significant challenge in online reading, supporting Bae (2022), who found that reliance on translation reflects limited comprehension skills. Students also struggle with unfamiliar vocabulary and low self-esteem, consistent with Li and Zhao (2021).

Regarding online reading strategies, students rely heavily on cognitive and digital approaches. High-use strategies include paying close attention to texts, using visual aids, applying context clues, and verifying understanding, in line with Kuo et al. (2021) and Baker et al. (2021). Moderately used strategies, such as identifying key information and evaluating content alignment, align with Anderson's (2003) framework. However, low use of strategies like setting a clear reading purpose indicates difficulties in intentional reading, which can hinder comprehension (Zhang & Li, 2023).

In terms of problem-solving and support strategies, re-reading and regaining focus highlight the role of metacognitive control (Martin et al., 2021), while low critical evaluation skills suggest a need for improvement in higher-order thinking (Martin et al., 2021). Students frequently use digital tools such as online references and note-taking, supporting Baker et al. (2021), whereas traditional methods like annotation and printing are less used (Mokhtari & Reichard, 2002; Zhang & Li, 2023). Finally, no relationship was found between reading difficulties and online reading strategies, consistent with Li and Zhang (2022) and Mohsin et al. (2023), indicating that strategy use does not necessarily influence students' ability to address reading difficulties.

In addition, this study's findings also revealed there is no relationship between reading difficulties and online reading strategies. Similar findings with a recent study by Li and Zhang (2022), which highlight that the online reading strategies usage to enhance comprehension, may not directly reflect in order to face reading difficulties like vocabulary deficits or decoding challenges. This is supported by Mohsin et al., (2023) also found no significant relationship between students' perceptions of reading difficulties and their use of online reading

strategies. This suggests that, the online reading strategies used do not influence students' awareness of facing reading difficulties.

REFERENCES

- Abbas, K. D. A. (2021). Factors Influencing Students' Reading Comprehension Difficulties Amidst the Use of Modular Distance Learning Approach in Mindanao State University Sulu –Senior High School. *Open Access Indonesia Journal of Social Sciences*, 4(2).
- Abd Rahman, M., & Mohamad, M. (2023). Extensive Reading to Assuage Primary ESL Learners Reading Difficulties: A Systematic Review. *Sciences*, 13(8), 513-528.
- Abeeleh, T. W. A. and Al-Sobh, M. (2021) Reading Comprehension Problems Encountered by EFL Students at Aljoun National University. *International Journal of Language and Linguistics*, 8(1), 6-15.
- Aebersold, J. A., & Field, M. L. 1997). *From reader to reading teacher: Issues and strategy for second language classroom*. Cambridge: Cambridge University Press
- Afflerbach, P., & Cho, B. Y. (2010). Determining and describing reading strategies: Internet and traditional forms of reading. In H. S. Waters & W. Schneider (Eds.), *Metacognition, strategy use, and instruction* (pp. 201–225).
- Al-Jarf, R. (2007). Developing reading and literacy in Saudi Arabia. ERIC.
- Al-Jarrah, H., & Ismail, N. S. B. (2018). Reading Comprehension Difficulties Among EFL Learners in Higher Learning Institutions. *International Journal of English Linguistics*, 8(7), 32.
- Al-Zu'bi, M. A. (2024). Difficulties and Solutions of Reading English Facing Freshmen Students at Al-Balqa Applied University. *International Journal of Religion*, 5(10), 4977–4983.
- Amer, A., AL Barwani, T., Ibrahim, M. (2010) Student Teachers' Perceived Use of Online Reading Strategies. *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, Vol 6(4), pp 102-113.
- Anderson, T. (2003). Getting the Mix Right Again: An Updated and Theoretical Rationale for Interaction. *The International Review of Research in Open and Distributed Learning*, 4(2).
- Bae, S. (2022). Translation strategies in second language acquisition: A study of learners' strategies in reading comprehension. *Journal of Second Language Teaching & Research*, 45(2), 185-199.
- Baker, L., Dwyer, A., & DeSantis, M. (2021). Active engagement in online reading: The role of digital tools and strategies in enhancing comprehension. *Reading and Writing*, 34(6), 1179–1198.
- Behalova, A. (2010). *Exploring online reading strategies of American undergraduate students*. Ph.D. thesis, Oklahoma State University.
- Dillah, D., Abd Hamid, N. B., Freni Afrin, J., Subramaniam, N., & Rahmat, N. H. (2023). Exploring Reading Difficulties and Online Reading Strategies Employed by Pre-University English as A Second Language (ESL) Learners. *International Journal of Academic Research in Business and Social Sciences*, 13(10).
- Driscoll, M.P. (2005). *Psychology of Learning for Instruction*, Pearson, Boston.
- Gedik, O., & Akyol, H. (2022). Reading Difficulty and Development of Fluent Reading Skills: An Action Research. *International Journal of Progressive Education*, 18(1), 22-41.

- Grabe, W., & Stoller, F. L. (2011). *Teaching and researching reading* (2nd ed.). Pearson Education.
- Habok, A., Oo, T. Z., & Magyar, A. (2024). The effect of reading strategy use on online reading comprehension. *Heliyon*, 10(2).
- Hew, K. F., & Brush, T. (2007). Integrating technology into K-12 education: Current trends and future directions. *Educational Technology Research and Development*, 55(3), 223-252.
- Hsieh, P. H. & Dwyer, F. (2009). The instructional effect of online reading strategies and learning styles on student academic achievement. *Educational Technology & Society*, 12(2), 36–5.
- Huang H.C. (2013). Online reading strategies at work: what teachers think and what students do, *ReCALL*, 25(3), 340–358.
- Huang, H.C., Chern, C.L., & Lin, C.C. (2009). EFL learners' use of online reading strategies and comprehension of texts: An exploratory study. *Computers and Education*, 52(1), 13–26.
- Jackson, S.L. (2015) *Research methods and Statistics-A Critical Thinking Approach* (5th Edition) Boston, USA: Cengage Learning.
- Jala, G. (2020). Pupils' Reading Comprehension, Problem-Solving Skills, and Academic Performance. *Journal of World English and Educational Practices*, 2(4).
- Khaobaht, L., & Hamiddin, D. N. M. (2024). Uncovering Language Learning Factors in Reading Difficulties: A Case Study of Thai Students in Indonesia. *Jurnal Penelitian, Pendidikan, dan Pembelajaran*, 19(17).
- Kim, U. J. & Kim, J. R. (2022). Success Factors of Extensive Online-Based Elementary English Reading. *Journal of Elementary English Education*, 28(4), 79-101.
- Koda, K. (2007). Reading and Language Learning: Crosslinguistic Constraints on Second Language Reading Development. *Language Learning*, 57(S1), 1-44.
- Kuo, L. J., Lin, S. S., & Yang, J. C. (2021). Active reading strategies and their impact on comprehension in digital environments. *Educational Technology Research and Development*, 69(1), 97–113.
- Li, J. (2020). Development and validation of Second Language Online Reading Strategies Inventory. *Computers and Education*, 145, 103733.
- Li, J., & Zhang, X. (2022). Investigating the relationship between online reading strategies and comprehension challenges in EFL learners. *Journal of Language and Literacy Education*, 18(2), 56–72.
- Li, Z., & Zhao, M. (2021). Lexical knowledge and self-confidence in second language learners: An empirical study of Chinese learners of English. *Language Learning Journal*, 50(1), 99-111.
- Marboot, K., Roohani, A., & Mirzaei, A. (2020). Investigating Iranian EFL Students' Metacognitive Online Reading Strategies, Critical Thinking, and their Relationship: A Mixed-Methods Study. *Issues In Language Teaching (ILT)*, 9(1), 151–182.
- Martin, L., Albright, K., & Kersey, A. (2021). Metacognitive control in reading comprehension: A study of online reading strategies. *Journal of Literacy Research*, 53(4), 575–590.
- Meganathan, P., Yap, N.T., Paramasivam, S., & Jalaluddin, I. (2019). Incidental and Intentional Learning of Vocabulary among Young ESL Learners. *3L The Southeast Asian Journal of English Language Studies*.
- Mokhtari, K., & Reichard, C. A. (2002). The impact of traditional and digital annotation techniques on online reading comprehension. *Reading Research Quarterly*, 37(3), 342–356.

- Mukhlif, Z., & Amir, Z. (2017). Investigating the Metacognitive Online Reading Strategies employed by Iraqi EFL Undergraduate Students. *Arab World English Journal*, 8(1), 372–385.
- Norman, A. (2023). Educational technology for reading instruction in developing countries: A systematic literature review. *Review of Education*, 11(3), e3423.
- Nur'Ain Mohsin, N., Rahim, M., Bidin, A., Johari, M. B., & Rahmat, N. H. (2023). A study of perceived reading difficulties and reading strategies: The case for online reading. *International Journal of Academic Research in Business and Social Sciences*, 13(5), 2732-2748.
- Par, L. (2020). The Relationship between Reading Strategies and Reading Achievement of the EFL Students. *International Journal of Instruction*, 13(2), 223-238.
- Rahmat, S. N. M., Hassan, M. H., & Shamsuddin, S. (2021). The relationship between reading difficulties and reading strategies among students. *Journal of Educational Research and Practice*, 11(1), 1-12.
- Rahmat, N. H., Sukimin, I. S. ., Sim, M. S. ., Anuar, M. ., & Mohandas, E. S. (2021). Online Learning Motivation and Satisfaction: A Case Study of Undergraduates vs Postgraduates. *International Journal of Asian Social Science*, 11(2), 88–97.
- Raja Yacob, Raja Nur Hidayah & Mohamad, Mimi. (2023). Investigating the Metacognitive Online Reading Strategies Among ESL Undergraduates. *International Journal of Academic Research in Business and Social Sciences*. 13.
- Rianto, A. (2021). Indonesian efl university students' metacognitive online reading strategies before and during the covid-19 pandemic. *Studies in English Language and Education*, 8(1), 16–33.
- Sheorey, R., & Mokhtari, K. (2001). Coping with academic materials: differences in the reading strategies of native and non-native readers. *System*, 29(4), 431-449.
- Soares, S., Boyes, M. E., Parrila, R., & Badcock, N. A. (2023). Does reading anxiety impact on academic achievement in higher education students?. *Dyslexia*, 29(3), 179-198.
- Waring, R., & Vu, H.T. (2020). Challenges Setting up Extensive Reading Programs in Vietnam. *Journal of Extensive Reading*, 5, 11-22.
- Yasin Öztürk, S. (2018). Use Of Metacognitive Online Reading Strategies By Student Teachers Of English. *European Journal of Foreign Language Teaching*, 3(3), 17–32.
- Zhang, D., & Li, X. (2023). Challenges in goal-directed reading: A comparative study of reading strategies among students in digital environments. *Journal of Educational Psychology*, 115(3), 543–559.