Investigating the Impact of ChatGPT on Reading Strategies

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ABSTRACT

This study examines the influence of ChatGPT on reading strategies in undergraduate students, concentrating on global reading strategies, problem-solving reading strategies, and supportive reading strategies. The study utilised a quantitative survey design informed by Cognitive Load Theory and the Metacognitive Regulation System, involving 197 participants. Data were gathered utilising a 44-item five-point Likert-scale questionnaire modified from Amer et al. (2010) and Youssef et al. (2024). The results indicated notable disparities in reading methods based on gender and reading proficiency; however, there were no significant differences in perceptions of ChatGPT across these characteristics. Students indicated extensive utilisation of global and problem-solving reading strategies, including the employment of contextual clues and the re-examination of challenging texts. Moreover, participants viewed ChatGPT favourably in fostering critical thinking, intellectual inquiry, and participation. Correlation studies revealed substantial moderate positive correlations between ChatGPT and global reading techniques (r = .337), problem-solving strategies (r = .419), and support methods (r = .440). The study suggests that ChatGPT serves as an effective cognitive scaffold, enhancing strategic reading, critical assessment, and student engagement when utilised with autonomous reading and critical thinking.

Keywords: ChatGPT; Reading Strategies; Academic Reading; Cognitive Load Theory; Metacognitive Regulation System.

INTRODUCTION

Background of Study

Since the release of ChatGPT in late 2022, higher education has transitioned from preliminary experimentation to regular implementation. Global surveys demonstrate extensive adoption among students and faculty; for instance, DEC reported the 2025 faculty survey revealed that 86% of faculty anticipated employing AI in instruction, despite 83% expressing apprehension regarding students' capacity to critically assess AI-generated content and 80% perceiving insufficient institutional guidance on classroom application (Digital Education Council, 2024, 2025). In scholarly publications, ChatGPT is increasingly characterised as an educational instrument that facilitates personalised learning, feedback, assessment, asynchronous assistance, and cognitive offloading, while concurrently eliciting apprehensions regarding hallucinations, plagiarism, privacy, misuse, and excessive dependence (Memarian & Doleck, 2023; UNESCO, 2023; Wang et al., 2024). This tension is significant because the most credible synthesis of experimental studies to date indicates that ChatGPT can enhance academic performance, affective-motivational outcomes, and higher-order thinking skills at the

university level. However, the same review cautions that many interventions are short-term and methodologically inconsistent, necessitating a cautious interpretation of the claimed benefits (Deng et al., 2025).

Recent research indicates that ChatGPT can serve as an on-demand academic reading assistance tool by simplifying vocabulary, elucidating concepts, summarising intricate texts, and developing ideas that enable students to engage with complicated readings more effectively (Abdullah et al., 2025). Moreover, integrated LLM-based reading platforms in academic environments have been developed to offer glossary lists, translations, assessment questions, and immediate feedback, closely mirroring scaffolding supports before, during, and after reading, and they can be adapted into critical-reading prompts (Huang et al., 2025). However, the evidence is not consistently favourable: in a university reading task, lexical definitions generated by ChatGPT were beneficial but not distinctly superior to those from a high-quality learner dictionary, indicating that AI assistance may facilitate vocabulary access without necessarily enhancing reading outcomes (Rees & Lew, 2024). The discipline is notably underdeveloped: a comprehensive evaluation of 70 empirical studies on ChatGPT in ESL/EFL instruction revealed that just two studies focused on reading, while 30 concentrated on writing, with the authors specifically recognising reading as an area requiring further investigation (Lo et al., 2024). The primary research gap is not merely whether ChatGPT can aid reading but rather how it influences students' strategic reading behaviours, including planning, questioning, monitoring, summarising, and assessing source credibility and whether this assistance enhances comprehension instead of replacing critical engagement. This gap is significant because reading comprehension is intrinsically a meaning-construction process vital to disciplinary learning in higher education. Consequently, a study on ChatGPT and reading strategies can provide evidence regarding when AI serves as effective scaffolding and when it potentially devolves into a shortcut that undermines independent judgement (Butterfuss et al., 2020; Abdullah et al., 2025; Huang et al., 2025).

Statement of Problem

College exposes undergraduate learners to heavy academic literacy requirements that prompt advanced cognitive and metacognitive reading strategies to be essential for comprehension (Du & Alm, 2024). Originally, reading was seen as an interactive act where readers would apply strategies like previewing or text structure monitoring, identifying main information, and synthesizing ideas for gaining metacognitive awareness and solving linguistic problems (Kitichaidateanan et al. 2026). The rising popularity of AI technology that generates content, e.g., ChatGPT, is changing the environment of online reading. Largely, AI simulators can work as scaffolds; they provide readers facing instructionally relevant text with difficult vocabulary, complex syntax, etc. a kind of reading support that is just in time, adaptive, and helpful (Dahia, 2026; Du & Alm, 2024). In fact, such a fruitful and meaningful use of a responsive reader-text communication can inspire and help with the self-regulation of text processing (Dahia, 2026). Although this is a very positive aspect of education, unregulated usage of ChatGPT in students' academic work brings about very deep epistemic and behavioural problems, which change the way students have their regular reading. One big problem is that students may turn to ChatGPT for an analytical shortcut instead of a metacognitive tool. They get used to completely outsourcing their initial understanding through chatbot-generated summaries and quick answers instead of struggling with a text themselves to reveal complex ideas (Dahia, 2026). This development should lead to passive digital reading habits and the "illusion of competence" formation where superficial engagements replace thorough cognitive processing (Martinez & Rodriguez, 2026). By delegating to an algorithm complex tasks like text synthesis and information filtering, students take the shortcut which, in fact, is supposed to be the cognitive effort, the recognition of which structural relationships, self-assessment of understanding, and critical thinking development are independent (Kitichaidateanan et al. 2026). Also, when students want to get a task done as fast as possible, neglecting the cognitive control processes necessary to overcome reading difficulties, their strategic processing will be only superficial, this way making the acquisition of the real skill is impossible. This is mainly the case in AI-supported digital environments (Kitichaidateanan et al., 2026; Martinez & Rodriguez, 2026).

The challenge here is that the problem of empirical imbalance in the current computer-assisted language learning and digital literacy research is becoming more serious. While many studies have been quickly done on quantitative adoption models, predictors of intention and different feedback mechanisms of ChatGPT in academic writing instruction, the related implications for everyday reading strategies have not been highlighted effectively (Martinez & Rodriguez, 2026). Recent baseline studies into digital literacy have even suggested that

a thorough examination of how interactive AI environments change traditional comprehension habits should be undertaken. In short, a quantitative study measuring technology adoption and quality of student interaction had a major finding that behavioural tracking was scarce and made an explicit recommendation for future research on how students engage and change their cognitive and metacognitive strategies in daily, independent AI-assisted reading processes (Martínez & Rodríguez, 2026).

Objective of the Study and Research Questions

This study aims to explore reading strategies and ChatGPT .Specifically, this study is done to answer the following questions;

1. Is there a significant relationship between (i) reading strategies and (ii) ChatGPT across gender?

H_{o1}: There is no significant relationship between (i) reading strategies and (ii) ChatGPT across gender

2. Is there a significant relationship between (i) reading strategies and (ii) ChatGPT across reading proficiency?

H_{o2}: There is no significant relationship between (i) reading strategies and (ii) ChatGPT across reading proficiency

3. How do learners perceive global reading strategies?

4. How do learners perceive problem-solving reading strategies?

5. How do learners perceive supporting reading strategies?

6. How do learners perceive ChatGPT in reading?

7. Is there a significant relationship between ChatGPT and all reading strategies?

H_{o3}: There is no significant relationship between ChatGPT and all reading strategies.

LITERATURE REVIEW

Theoretical Framework of the Study

Cognitive Load Theory and how helps in reading strategies

Cognitive Load Theory (CLT), constructed by John Sweller, argues that learning is limited by the finite capacity of working memory and that instructional design should focus on enhancing cognitive processing by regulating intrinsic, extraneous, and germane cognitive load (Sweller, 1988; Sweller, Ayres, & Kalyuga, 2011). In reading, CLT guides the development of solutions that minimise extraneous processing requirements while facilitating schema formation and automation. For instance, dissecting intricate texts, pre-instructing essential vocabulary, incorporating pertinent pictures, and directing learners through systematic questioning can reduce superfluous cognitive load and enable enhanced allocation of cognitive resources towards comprehension and inference-making. Moreover, scaffolding methods like worked examples and the gradual transfer of responsibility assist readers in forming domain-specific schemas that improve fluency and comprehension efficiency. By aligning reading teaching with principles from CLT—such as coherence, signalling, and redundancy effects—educators can enhance cognitive processing and improve reading results, especially for new learners who are more susceptible to overload.

ChatGPT & Reading

This study is based on two complementary theories, Cognitive Load Theory (CLT) and the Metacognitive

Regulation System, which together serve the purpose of examining in a step-by-step manner the influence of interaction with generative AI on undergraduate reading strategies. Cognitive Load Theory states that the working memory of a person has a limited capacity, so a learner can be easily overwhelmed by complicated processing of text if there is a lot of non-essential mental load (Iqbal et al. 2025; Rahmat, 2026). By using ChatGPT to read through dense academic material, the AI conversation partner works as an external dynamic scaffold, effectively reducing extra cognitive load in a very straightforward way – breaking down complicated sentences instantaneously, explaining elaborate technical terms, and giving immediate contextual summaries, among other strategies (Alyami, 2026). However, the Metacognitive Regulation Setup supports the idea that reading comprehension is essentially an active, self-regulated circle where readers have to continually implement several particular regulatory components – plan, monitor, evaluate, and manage information to check their own understanding and develop knowledge schemas having real meaning (Dai, 2026). The core conflict is that non-systematic dependence on ChatGPT can lead students to offload the entire process of high-level text synthesis and critical analysis. While this currently reduces extraneous cognitive overload, it simultaneously removes the "germane" intellectual load—the essential processing necessary for schema acquisition and long-term memory encoding (Iqbal et al. 2025; Rahmat, 2026). When generative processing is not done, the learners' self-regulatory loops become inactive, resulting in a scenario of over-the-top cognitive offloading in which a blind dependence on AI shortcuts and a shallow feeling of competence contribute to the neglect of independent critical thinking, task persistence, and lasting regulation of deep reading (Dai, 2026; Skulmowski & Xu, 2026). Taking these two theories as a guide, this paper intends to find out to what extent ChatGPT is a useful cognitive support for text processing and to what extent it allows users to avoid intellectual struggle that is necessary, leading to the hindrance of independent metacognitive regulation.

Past Studies on Reading and ChatGPT

Current research indicates that investigating ChatGPT's role in reading remains in the early stages, yet a uniform trend is emerging. Rather than substituting traditional teaching methods, ChatGPT enhances comprehension, strategic reading, and student involvement when used within organized instructional frameworks. For instance, Al-Otaibi and Al-Homidhi (2025) conducted a study with 60 female university students, demonstrating that a ChatGPT-integrated curriculum boosted proficiencies across literal and critical comprehension levels. These results imply that ChatGPT functions as an effective educational scaffold, particularly when it is intentionally woven into pedagogical interventions.

This pattern is further supported by other empirical findings. Behforouz and Al Ghaithi (2025) reported that 50 Omani learners using ChatGPT-supported practice significantly outperformed control groups, with gains maintained in delayed posttests. Similarly, Kim (2024) demonstrated that ChatGPT enhances top-down processing in identifying main ideas among Korean EFL learners. This finding is meaningful as it highlights ChatGPT’s role in supporting higher-order cognitive processes, such as constructing meaning and organizing information, rather than merely locating answers.

Further insights from qualitative studies show a progression in reading complexity. Zhang et al. (2025) observed 35 EFL learners advancing from identifying explicit information to engaging in synthesis and inference when ChatGPT was paired with instructional strategies. Likewise, Thongsan and Anderson (2025) found improvements in recognising bias and generating counterarguments, alongside increased motivation. These findings suggest that ChatGPT may foster a more analytical and reflective approach to academic reading.

Additional research broadens these findings across diverse populations. Gharaibeh and Basulayyim (2025) showed that ChatGPT-based instruction improved contextual understanding among children with dyslexia. Rahmat (2026) also found a significant relationship between ChatGPT usage and online reading strategies among undergraduates, reinforcing its effectiveness when aligned with self-regulated learning. At a broader level, a survey by Ma et al. (2024) of 492 teachers across 41 countries concluded that while ChatGPT is widely utilised, its effectiveness depends on critical evaluation and ethical judgement.

Overall, the current body of research suggests that ChatGPT is establishing a role in reading pedagogy by supporting comprehension and feedback. While findings are promising, they are often limited by small sample

sizes and context-specific designs. Consequently, the evidence supports the conclusion that ChatGPT can enhance reading outcomes as a guided instructional tool, though further research is required to generalise its long-term impact across diverse educational settings.

Conceptual Framework of the Study

Academic reading is sometimes feared by learners, as the reading process involves communication between the reader and the text (Rahmat et al., 2020). According to Amer et al. (2010), readers depend on strategies such as global, problem-solving, and support strategies to make sense of what they are reading. Figure 1 shows the conceptual framework of the study. Global reading strategies are intentional, top-down, and planned metacognitive techniques used to monitor or manage reading comprehension. They involve pre-reading and high-level analysis, such as setting a purpose, skimming for structure, using text aids (tables, figures), and activating background knowledge. Next, problem-solving reading strategies refer to metacognitive techniques used to overcome comprehension difficulties, involving active, localised adjustments when text becomes difficult. These strategies, often used during reading, include adjusting reading speed, re-reading to improve understanding, guessing word meanings, and visualising information. Support reading strategies are conscious goal-setting techniques that help readers, particularly those needing extra support, to construct meaning, analyse text structure, and improve comprehension.

This study explores how ChatGPT helps to reduce the cognitive load (Sweller, 1988) of academic readers. Activities done by ChatGPT help readers process information, build schemas, and store knowledge in long-term memory. According to Youssef et al. (2024), ChatGPT helps learners improve critical abilities, academic achievement, and engagement.

Additionally, this study also explores the relationship between ChatGPT and all types of strategies in reading.

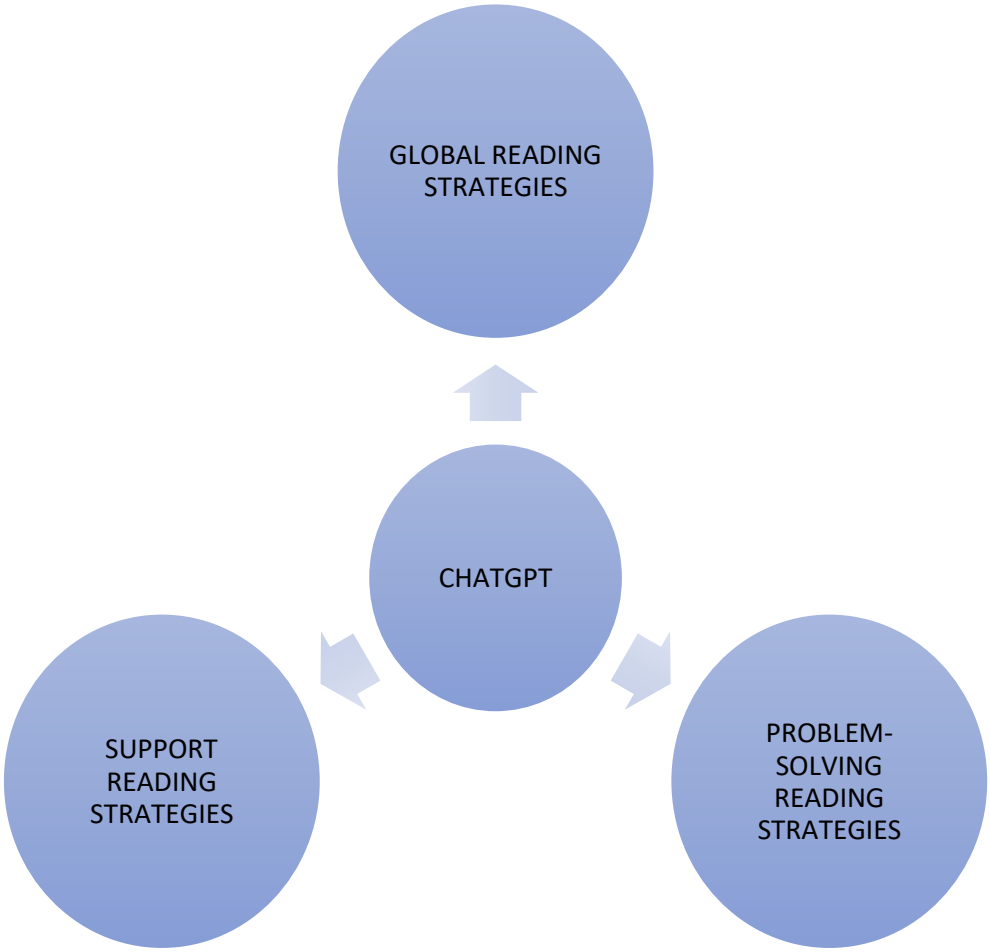

Figure 1- Conceptual Framework of the Study

ChatGPT and Reading Strategies.

METHODOLOGY

This quantitative study is done to explore ChatGPT and reading strategies. A convenient sample of 197 participants responded to the survey. The instrument used is a 5 Likert-scale survey and is rooted from Amer, et al. (2010) and Youssef et al. (2024) to reveal the variables in table 3 below. Table 1 below shows the categories used for the Likert scale: 1 is for 'Strongly Disagree', '2' is for 'Disagree', '3' is for 'Undecided', '4' is for 'Agree' and '5' is for 'Strongly Agree'.

Table 1- Likert Scale Use

1	Strongly Disagree
2	Disagree
3	Undecided
4	Agree
5	Strongly Agree

Table 2- Distribution of Items in the Survey

SECTION	VARIABLE	CONSTRUCT	NO OF ITEMS	TOT
B	Reading	Global	6 (.810)	
		Problem-Solving	6(.774)	
		Support	6 (.776)	
C	ChatGPT	Critical thinking abilities	4	16(.929)
		Academic achievement	4	
		ChatGPT usage	5	
		Student engagement	3	
				44(.928)

Table 2 shows the distribution of items in the survey. Section B has 18 items on reading. Section C has 16 items on ChatGPT.

Table 3- Reliability Levels, Cronbach's Alpha Ranges, and Their Interpretations

Reliability Level	Cronbach's Alpha range	Interpretation
Excellent	0.9 and above	Indicates very high internal consistency
Good	0.80-0.89	Reflects strong internal consistency
Acceptable	0.70-0.79	Indicates acceptable internal consistency
Questionable	0.60-0.69	Reflects questionable internal consistency
Poor	Below 0.6	Indicates poor internal consistency

In order to determine the internal reliability of the instrument, reliability analysis is conducted. Table 3 above shows the distribution and interpretation of the Cronbach Alpha range. According to Ahmad et al. (2024), Cronbach Alpha scores between 0.7 to 0.9 is considered acceptable to excellent.

Table 2 also shows the reliability of the survey. The analysis shows a Cronbach alpha of .810 for global, .774 for problem-solving, .776 for support strategies, and .929 for ChatGPT. The overall Cronbach's Alpha for all 44 items is .928, 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.

FINDINGS

Demographic Analysis

According to Zienefuss et al. (2021), researchers report demographic data in percentages to establish sample representativeness and allow for generalisability to a larger population. The reporting also provides an overview of participants' characteristics. Percentages offer a clear and understandable picture of the sample makeup.

Table 4- percentage for Demographic Profile

Question	Demographic Profile	Categories	Percentage (%)
1	Gender	Male	39%
		Female	61%
2	Self-Rating Reading in English	Average	55%
		Good	45%

The demographic analysis for the 197 participants revealed that the sample was predominantly female, making up 61% of the respondents, while males constituted 39%. Regarding self-rated reading proficiency in English, the majority of the participants (55%) considered their ability to be "Average", with the remaining 45% self-rating their reading proficiency as "Good".

Inferential Statistics

According to Shah (2024), there are three main functions of a T-test. Firstly, T-tests are done to compare means. This test is also done to determine if the average scores (mean) or values of two groups, or one group

against a known value, are different enough to be considered statistically meaningful and are not just due to random chance. Secondly, a T-test is done to test hypotheses. Researchers use t-tests to test hypotheses about means, such as whether a new treatment significantly impacts a variable or if there's a difference in performance between two distinct groups. Lastly, a T-test is done to identify significant differences. The output of a t-test provides a p-value (significance value). If this p-value is below a predetermined threshold (often 0.05), it indicates a statistically significant difference, allowing researchers to draw conclusions about the populations from which their samples were drawn.

Findings for Gender

This section presents data to answer research question 1: Is there a significant relationship between (i) reading strategies and (ii) ChatGPT across gender?

$H_{o1:}$ There is no significant relationship between (i) reading strategies and (ii) ChatGPT across gender

Table 5: T-Test for (i) reading strategies and (ii) ChatGPT across gender

Group Statistics

	Q1GENDER	N	Mean	Std. Deviation	Std. Error Mean
READING	MALE	77	3.7193	.49362	.05625
	FEMALE	120	3.9481	.51584	.04709
CHATGPT	MALE	77	3.6445	.57069	.06504
	FEMALE	120	3.6547	.64673	.05904

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance				95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Mean Difference	Std. Error Difference	Lower	Upper
READING	Equal variances assumed	.014	.905	-3.089	195	.001	.002	-.22881	.07407	-.37490	-.08273
	Equal variances not assumed			-3.119	167.351	.001	.002	-.22881	.07336	-.37364	-.08398
CHATGPT	Equal variances assumed	1.136	.288	-.113	195	.455	.910	-.01021	.09027	-.18823	.16782
	Equal variances not assumed			-.116	176.374	.454	.908	-.01021	.08784	-.18355	.16314

A two-sample t-test was performed to compare reading strategies and (ii) ChatGPT across gender. There was a significant difference in reading (p=0.002) across genders. However, there is no significant difference for ChatGPT (p=0.910) across gender.

Findings for Reading Proficiency

This section presents data to answer research question 2: Is there a significant relationship between (i) reading strategies and (ii) ChatGPT across reading proficiency?

H_{o2}: There is no significant relationship between (i) reading strategies and (ii) ChatGPT across reading proficiency

Table 6: T-Test for (i) reading strategies and (ii) ChatGPT across reading proficiency

Group Statistics

	Q2SELFRATE	N	Mean	Std. Deviation	Std. Error Mean
READING	AVERAGE	108	3.7665	.50192	.04830
	GOOD	89	3.9707	.51840	.05495
CHATGPT	AVERAGE	108	3.6250	.57872	.05569
	GOOD	89	3.6819	.66175	.07015

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
						Significance		Mean	Std. Error	95% Confidence Interval of the Difference	
		F	Sig.	t	df	One-Sided p	Two-Sided p	Difference	Difference	Lower	Upper
READING	Equal variances assumed	.012	.914	-2.800	195	.003	.006	-.20420	.07293	-.34803	-.06037
	Equal variances not assumed			-2.791	185.455	.003	.006	-.20420	.07316	-.34853	-.05987
CHATGPT	Equal variances assumed	.330	.566	-.643	195	.260	.521	-.05688	.08841	-.23125	.11749
	Equal variances not assumed			-.635	176.289	.263	.526	-.05688	.08956	-.23363	.11987

A two-sample t-test was performed to compare reading strategies and (ii) ChatGPT across reading proficiency. There was a significant difference in reading (p=0.006) across reading proficiency. However, there is no significance for ChatGPT (p=0.521) across reading proficiency.

Descriptive Statistics

Why is there a need to report the mean and standard deviation? According to Vetter (2017), Mean (M) represents the average, or centre of a data set. Standard deviation (SD) indicates the typical distance of individual observations from the mean which shows the data's variability or spread. A low SD means the data points are clustered close to the mean whole a high. SD indicates they are more spread out. It is good to have a high SD.

Findings for Global Reading Strategies

This section presents data to answer research question 1: How do learners perceive global reading strategies?

Table 7- mean (M) and Standard Deviation for GLOBAL STRATEGIES(GS)

ITEM	M	SD
GSQ1 I think about whether the content of the on-line text fits my reading purpose.	4.01	0.73
GSQ2 When reading on-line, I decide what to read thoroughly and what to ignore.	3.96	0.82
GSQ3 I use context clues to help me better understand what I am reading online.	4.06	0.80
GSQ4 I use typographical features like boldface and italics to identify key information.	3.74	1.06
GSQ5 I try to guess what the content of the online text is about when I read.	3.99	0.80

GSQ6 I scan the online text to get a basic idea of whether it will serve my purposes before deciding to read it.	3.94	0.90

Given the data in Table 7, the descriptive statistics for Global Strategies (GS) reveal that participants consistently use different plans and checks of their cognition at a deep level even when reading online texts. All mean scores reflect a very strong overall agreement with the reported use of these planning and monitoring strategies. Students agreed most with the idea that they use contextual scaffolding, or the use of context, to understand better the meaning of the material online (GSQ3: M=4.06, SD=0.80). Only slightly behind, they showed a strong commitment to goal-directed reading as students seriously questioned the suitability of the text content for their specific reading purpose (GSQ1: M=4.01, SD=0.73). There was a very low level of disagreement here, as this item also gave the lowest standard deviation. For predictive and selective processing: learners indicated that they are generally focused on understanding online text flow by making predictions (GSQ5: M=3.99, SD=0.80); at the same time, they also make conscious decisions about which parts to read in detail and which to ignore (GSQ2: M=3.96, SD=0.82). They also admitted to scanning a text to form a rough idea about its usefulness before reading it thoroughly (GSQ6: M=3.94, SD=0.90). Then again, the least usage of surface-level textual markers was seen in highlighting key information through the use of typographical features like boldface and italics (GSQ4: M=3.74, SD=1.06). Interestingly, GSQ4, besides having the lowest mean, also recorded the highest SD (SD=1.06), showing that students' dependence on such structural typographical formatting varies a lot more than their dependence on deeper metacognitive monitoring strategies.

Findings for Problem-Solving Reading Strategies

This section presents data to answer research question 2: How do learners perceive problem-solving reading strategies?

Table 8- mean (M) and Standard Deviation for PROBLEM--SOLVING STRATEGIES (PS)

ITEM	M	SD
PSSQ1 I try to get back on track when I lose concentration.	4.11	0.74
PSSQ2 I adjust my reading speed according to what I am reading on-line.	4.11	0.80
PSSQ3 I stop from time to time and think about what I am reading on-line.	3.86	0.81
PSSQ4 When on-line text becomes difficult, I re-read it to increase my understanding.	4.36	0.68
PSSQ5 When I read on-line, I guess the meaning of unknown words or phrases.	3.90	0.88
PSSQ6 I can distinguish between fact and opinion in on-line texts.	3.83	0.88

Table 8 data reveals that when it comes to problem-solving strategies (PS), learners mainly use direct and tactical adjustments to regulate their understanding when they face difficulties in online reading environments since all the means show a completely clear agreement above the neutral level. Students showed their strongest agreement on an iterative reading process through a main reliance on re-reading text to clear up their grammar confusion each time when online material is difficult to understand (PSSQ4: M=4.36, SD=0.68), which also resulted in the minimum standard deviation; that is, it is the most popular strategy among the cohort. It is also well validated by self-regulation strategies, which mainly concentrate on focus and pacing, and students even share the highest level of agreement on the statements that they: (1) actively try to get back on track when they lose their concentration (PSSQ1: M=4.11, SD=0.74), and (2) adjust their reading speed for online reading per the difficulty of the material (PSSQ2: M=4.11, SD=0.80). When learners come across a word or term that is unfamiliar to them, they mostly turn to lexical inference, i.e. they try to guess the meaning of unknown words or phrases from the surrounding context (PSSQ5: M=3.90, SD=0.88). But, the least relative agreement was in structural pausing and deep text evaluation areas; students noted slightly lowered means for the statement of stopping from time to time to think about what they are reading (PSSQ3: M=3.86, SD=0.81) and consciously separating fact and opinion in online environments (PSSQ6: M=3.83, SD=0.88). Altogether, these results indicate that although online readers are very good at the immediate, adaptive fix-up strategies like re-reading, speed modification, and

focus recovery, they are not as willing to make spontaneous structural pauses or evaluate information types when navigating online.

Findings for Support Reading Strategies

This section presents data to answer research question 3: How do learners perceive support reading strategies?

Table 9- mean (M) and Standard Deviation for SUPPORT STRATEGIES (SS)

ITEM	M	SD
SSQ1 I take notes while reading on-line to help me understand what I read.	3.14	1.07
SSQ2 I use reference materials (e.g. an on-line dictionary) to help me understand what I read on-line.	3.74	1.02
SSQ3 I paraphrase (restate ideas in my own words) to better understand what I read on-line.	3.81	0.96
SSQ4 I ask myself questions I like to have answered in the on-line text	3.68	0.98
SSQ5 When reading on-line, I translate from English into my native language.	3.33	1.18
SSQ6 When reading on-line, I think about information in both English and my mother tongue.	3.90	0.94

Table 9 indicates a consistent pattern of moderate to high engagement, with mean scores spanning from 3.14 to 3.90. The primary finding is evidenced in SSQ6 (M = 3.90, SD = 0.94), which suggests that bilingual processing serves as the dominant approach, with learners frequently bridging their mother tongue and English to facilitate comprehension. This is supported by SSQ3 (M = 3.81, SD = 0.96) and SSQ2 (M = 3.74, SD = 1.02), highlighting that paraphrasing and the utilisation of online reference tools are prevalent techniques for meaning-making. Furthermore, SSQ4 (M = 3.68, SD = 0.98) reflects the regular application of self-questioning as a metacognitive tool. Conversely, the lower mean scores observed for SSQ5 (M = 3.33, SD = 1.18) and SSQ1 (M = 3.14, SD = 1.07) reveal that direct translation and note-taking are less frequently utilised, with SSQ5 exhibiting the highest variability in respondent behaviour. In summary, the findings suggest that learners favor higher-order cognitive strategies, such as bilingual processing and paraphrasing, over traditional surface-level methods like translation and note-taking during online reading tasks.

Findings for ChatGPT

This section presents data to answer research question 4: How do learners perceive ChatGPT in reading? In the context of this study, this is measured by (i) critical thinking abilities, (ii) academic achievements, (ii) ChatGPT usage, and (iv) student engagement.

Table 10- Mean (M) and Standard Deviation (SD) for Critical Thinking Abilities (Ct)

ITEM	M	SD
CTQ1 I usually need clarification on the precision and reliability of information provided by ChatGPT, which enhances my critical thinking skills.	3.79	0.90
CTQ2 ChatGPT's responses made me doubt their validity, leading me to seek further clarification or evidence.	3.78	0.85
CTQ3 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.	3.86	0.82
CTQ4I I need clarification about the accuracy of ChatGPT's output, which often encourages me to evaluate the information and conduct additional research independently.	3.86	0.87

Table 10 reveals a consistent pattern of high engagement in evaluative and reflective processes, with mean scores spanning from 3.78 to 3.86. The primary findings are evidenced in CTQ3 (M = 3.86, SD = 0.82) and CTQ4 (M

= 3.86, SD = 0.87), which suggest that students actively verify information by exploring alternative perspectives and conducting independent evaluations of ChatGPT's output. This is supported by CTQ1 (M = 3.79, SD = 0.90) and CTQ2 (M = 3.78, SD = 0.85), highlighting that learners are driven to seek clarification and additional evidence when encountering uncertainty. In summary, the findings suggest that ChatGPT usage is associated with robust critical thinking practices, where learners favour validation and independent evaluation over the passive acceptance of information.

Table 11 - Mean (M) and Standard Deviation (SD) for ACADEMIC ACHIEVEMENTS (AA)

ITEM	M	SD
AAQ1 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.	3.80	0.81
AAQ2 ChatGPT brings innovative ideas that are ready to be shared with students.	3.63	0.83
AAQ3 Students can anticipate robust writing guidance from ChatGPT.	3.48	0.82
AAQ4 ChatGPT has improved my academic performance.	3.58	0.92

Table 11 indicates a consistent pattern of moderate to high engagement, with mean scores spanning from 3.48 to 3.80. The primary finding is evidenced in AAQ1 (M = 3.80, SD = 0.81), which suggests that students actively utilize ChatGPT to explore alternative perspectives and diverse information sources, reinforcing its role in exploratory learning. This is supported by AAQ2 (M = 3.63, SD = 0.83), highlighting that the tool is valued for providing innovative ideas for academic tasks. Conversely, AAQ4 (M = 3.58, SD = 0.92) and AAQ3 (M = 3.48, SD = 0.82) reflect a more moderate perception of its direct impact on performance and writing guidance, with AAQ3 exhibiting the lowest level of reliance for structured assistance. In summary, the findings suggest that learners favor using ChatGPT as a catalyst for idea generation and independent research rather than as a primary instrument for writing support or performance enhancement.

Table 12- Mean (M) and Standard Deviation (SD) for CHATGPT USGAE (CU)

ITEM	M	SD
CUQ1 ChatGPT is a state-of-the-art writing model that is favorably used today.	3.54	0.95
CUQ2 Students seek help from ChatGPT’s assistance in composing essays and articles.	3.77	0.85
CUQ3 ChatGPT helps students in English language translation.	3.74	0.95
CUQ4 Employing ChatGPT significantly improves human productivity.	3.34	0.96
CUQ5 The advent of ChatGPT marks a groundbreaking transformation in Natural Language Processing capabilities.	3.43	0.86

Table 12 displays the mean (M) and standard deviation (SD) values regarding respondents' perceptions on ChatGPT utilisation. The results demonstrate a somewhat favourable evaluation of ChatGPT, with mean scores between 3.34 and 3.77. The item with the highest rating was CUQ2 (M = 3.77, SD = 0.85), indicating that respondents predominantly concur that students utilise ChatGPT for essay and article composition aid. CUQ3 (M = 3.74, SD = 0.95) closely follows, suggesting that respondents regard ChatGPT as an effective instrument for English language translation. CUQ1 also documented a notably elevated mean score (M = 3.54, SD = 0.95), indicating consensus that ChatGPT is a cutting-edge writing paradigm extensively utilised in contemporary contexts. Conversely, CUQ5 (M = 3.43, SD = 0.86) indicates a reasonable consensus that ChatGPT signifies a significant breakthrough in Natural Language Processing skills. The lowest mean score was recorded for CUQ4 (M = 3.34, SD = 0.96), indicating a relatively lower consensus on ChatGPT's capacity to substantially enhance human productivity. The standard deviation values, spanning from 0.85 to 0.96, signify a substantial degree of heterogeneity in respondents' attitudes, indicating that while participants predominantly regarded ChatGPT positively, some discrepancies in their impressions existed. The data indicate that respondents predominantly link ChatGPT with academic assistance roles, especially in writing and translation, rather than with general productivity improvement.

Table 13- Mean (M) and Standard Deviation (SD) for Student Engagement (Se)

ITEM	M	SD
SEQ1 ChatGPT is more interactive, human-like, and engaging for the students.	3.44	0.93
SEQ2 ChatGPT increases confidence in my ability to conduct research/to search for materials.	3.58	0.89
SEQ3 ChatGPT is easy to use and more engaging for me.	3.78	0.91

Table 13 shows the mean (M) and standard deviation (SD) values for the Student Engagement (SE) construct. The findings suggest that participants predominantly possess favourable views on ChatGPT's contribution to improving student engagement, with average scores between 3.44 and 3.78. Of the three items, SEQ3 exhibited the highest mean score (M = 3.78, SD = 0.91), indicating that respondents regard ChatGPT as very user-friendly and engaging. This discovery underscores the significance of usability in enhancing student engagement with AI-assisted educational systems. The second highest mean score was recorded for SEQ2 (M = 3.58, SD = 0.89), suggesting that ChatGPT enhances students' confidence in conducting research and locating learning resources. Conversely, SEQ1 had the lowest mean score (M = 3.44, SD = 0.93), however respondents moderately concurred that ChatGPT is interactive, human-like, and interesting for students. The standard deviation values, spanning from 0.89 to 0.93, indicate a very uniform response pattern with modest heterogeneity among subjects. The findings indicate that students regard ChatGPT as an intuitive and beneficial educational resource that fosters engagement by improving information accessibility and promoting active involvement in academic activities.

Exploratory Statistics (correlation)

According to He (2024), correlation is a statistical technique that shows how strongly two variables are related to each other or the degree of association between the two. It's a common tool for describing simple relationships without making a statement about cause and effect. This section presents data to answer the research question on correlation.

According to He (2024), 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.

Findings for the Relationship between ChatGPT and all reading strategies

This section presents data to answer research question 4: How do learners perceive ChatGPT in reading?

$H_{o3:}$ There is no significant relationship between ChatGPT and all reading strategies.

To determine if there is a significant association in the mean scores between ChatGPT and all reading strategies data is anlaysed using SPSS for correlations. Results are presented separately in table 14 below.

Table 14- Correlation between ChatGPT and all reading strategies

		GLOBAL	PROBLEM-SOLVING	SUPPORT
CHATGPT	Pearson (Correlation	.337**	.419**	.440**
	Sig (2-tailed)	<.000	<.000	<.000
	N	197	197	197

**Correlation is significant at the 0.01 level (2-tailed)

Table 14 shows there is an association between ChatGPT and all reading strategies. In the context of this study, reading strategies are measured by global, problem-solving, and support strategies. Correlation analysis shows that there is a moderate significant association between ChatGPT and global strategies (r=.337**) and

(p=.<.000); between ChatGPT and problem-solving strategies (r=.419**) and (p=.<.000), and also ChatGPT and support strategies (r=.440**) and (p=.<.000). This means null hypothesis is rejected for H_{o3}.

CONCLUSION

Summary of Findings and Discussions

The results disclosed significant insights into learners' perspectives of reading methods and ChatGPT in academic reading. In Research Question 1, participants exhibited significant engagement with global reading strategies, evidenced by the highest mean for employing context clues to comprehend online texts (GSQ3, M = 4.06), whereas the lowest mean pertained to utilising typographical features, such as boldface and italics, to discern key information (GSQ4, M = 3.74). In response to Research Question 2, participants indicated a robust application of problem-solving reading methods, notably re-reading challenging texts to enhance comprehension (PSSQ4, M = 4.36). Conversely, the ability to differentiate between facts and opinions in online materials garnered the lowest mean score (PSSQ6, M = 3.83). In Research Question 3, participants predominantly utilised bilingual processing, contemplating in both English and their native language while reading (SSQ6, M = 3.90), whereas note-taking during online reading was the least favoured support approach

(SSQ1, M = 3.14). The findings suggest that learners utilise active cognitive and metacognitive techniques to manage comprehension, especially those that directly facilitate understanding and meaning formation.

The results regarding reading methods align with prior studies examined in the literature review. The significant dependence on contextual cues, re-reading, and bilingual processing corroborates the findings of Behforouz and Al Ghaithi (2025), who indicated that ChatGPT-assisted learners exhibited enhanced reading performance via strategic text engagement. Likewise, the inclination to re-read challenging texts corresponds with the findings of Zhang et al. (2025), who discovered that learners advanced from fundamental information retrieval to more profound inferential and analytical reading when aided by ChatGPT. The current findings corroborate the research conducted by Thongsan and Anderson (2025), which indicated that AI-assisted reading environments fostered greater critical engagement with texts among learners. Moreover, the notable disparities observed in reading strategies based on gender and reading proficiency indicate that individual learner characteristics persistently affect strategic reading behaviour, a conclusion that aligns with extensive research on reading strategies highlighting the impact of learner differences on comprehension processes.

Concerning Research Question 4, students predominantly viewed ChatGPT favourably in facilitating reading activities. The most highly rated elements included the inclination to consider diverse perspectives and autonomously assess information (CTQ3 and CTQ4, M = 3.86), the application of ChatGPT for idea exploration in academic contexts (AAQ1, M = 3.80), support in essay composition (CUQ2, M = 3.77), and user-friendliness and engagement (SEQ3, M = 3.78). The lowest ratings were observed for writing coaching (AAQ3, M = 3.48), productivity increase (CUQ4, M = 3.34), and human-like contact (SEQ1, M = 3.44). Correlation analysis indicated substantial moderate positive correlations between ChatGPT and global reading strategies ($r = .337$, $p < .001$), problem-solving strategies ($r = .419$, $p < .001$), and support methods ($r = .440$, $p < .001$). These findings align with Al-Otaibi and Al-Homidhi (2025), who discovered that ChatGPT improves reading comprehension when incorporated into instruction, and with Rahmat (2026), who indicated a substantial correlation between ChatGPT utilisation and online reading practices among undergraduates. Similarly, the results corroborate Ma et al. (2024), who contended that the efficacy of ChatGPT is contingent upon learners' capacity to critically assess AI-generated content. The study indicates that ChatGPT serves as an effective cognitive scaffold that enhances strategic reading, critical assessment, and learner engagement, contingent upon students utilising it as a supplement rather than a substitute for autonomous reading and critical thinking.

Implications and Suggestions for Future Research

Theoretical and Conceptual Implications

This study's findings offer significant theoretical and conceptual implications for both Cognitive Load Theory (CLT) and the Metacognitive Regulation System. As outlined in Section 2.1, the Cognitive burden Theory posits

that learning is optimised when cognitive resources are deployed effectively and extraneous cognitive burden is minimised. The favourable views of ChatGPT, especially regarding its role in enhancing critical thinking, academic inquiry, and student involvement, indicate that ChatGPT serves as a cognitive scaffold, aiding learners in the successful processing of intricate academic texts. Moreover, the notable positive correlations between ChatGPT and global (r = .337), problem-solving (r = .419), and support reading methods (r = .440) suggest that learners persist in active metacognitive regulation when utilising AI-assisted technologies. The findings conceptually validate the theory outlined in Section 2.3, which identifies ChatGPT as a variable linked to global, problem-solving, and supportive reading techniques. The extensive utilisation of contextual clues, re-reading, bilingual processing, and independent verification of ChatGPT-generated information indicates that learners are not just dependent on AI-generated responses but are actively engaging in strategic reading practices to derive meaning. Consequently, the study substantiates the assertion that ChatGPT can function as an efficient cognitive support aid that enhances, rather than supplants, learners' metacognitive reading processes when utilised effectively in academic reading environments.

Pedagogical Implications

The results of this study indicate numerous significant pedagogical implications for reading instruction in higher education. Given that learners exhibited favourable perceptions of ChatGPT and its substantial correlation with global, problem-solving, and supportive reading techniques, instructors ought to incorporate ChatGPT as a guided reading scaffold rather than solely as a content-generation instrument. Reading activities can be structured to promote students' utilisation of ChatGPT for elucidating challenging concepts, formulating guiding questions, summarising texts, and validating understanding, all while ensuring active engagement with the original reading materials. The results underscore the necessity of fostering critical evaluation abilities, as students often said that they verified information supplied by ChatGPT and sought alternate sources. Consequently, educators ought to integrate tasks that promote critical reading, source assessment, fact verification, and reflective discourse to guarantee that ChatGPT enhances rather than supplants independent thought. This technique can enhance learners' metacognitive reading strategies, improve comprehension, and foster responsible AI-assisted academic literacy.

Suggestions for Future Research

Subsequent research should broaden the examination of ChatGPT and reading techniques by incorporating participants from other educational levels, disciplines, institutions, and linguistic backgrounds to augment the generalisability of the results. Given that the current study utilised a quantitative survey design, future researchers can consider employing mixed-methods or qualitative methodologies, including think-aloud protocols, interviews, and reading observations, to provide a more profound insight into learners' interactions with ChatGPT during authentic reading assignments. Researchers might further investigate supplementary variables including reading comprehension performance, critical literacy, digital literacy, cognitive load, metacognitive awareness, and AI reliance to enhance the existing theoretical framework. Additionally, experimental and longitudinal research may be undertaken to investigate the long-term impacts of ChatGPT on reading behaviour and ascertain if AI-assisted reading promotes enhanced comprehension or leads to excessive cognitive offloading over time. Such enquiries would enhance the understanding of how generative AI might be applied successfully and responsibly into academic reading practices. Additionally, future research should use longitudinal or experimental designs to determine whether ChatGPT directly helps in improving students' reading strategies and critical thinking over time. Integrating surveys with reading comprehension tests, think-aloud protocols, or classroom observations may be able to provide more objective evidence of changes in reading behavior. Researchers should also look into additional variables such as digital literacy, academic discipline, frequency of AI use, and prior reading proficiency to better explain differences in students' learning experiences.

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APPENDIX

Reading Strategies & ChatGPT

(This instrument is adapted from Amer,et,al,,2010 & Youssef, et.al.,2021)

SECTION	VARIABLE	CONSTRUCT	NO OF ITEMS	TOT
B	READING STRATEGIES (Amer,et.al.,2010)	Global	6	18
		Problem-Solving	6	
		Support	6	
C	CHAT GPT Youssef,et.al.(2024)	Critical thinking abilities	4	16
		Academic achievement	4	
		ChatGPT usage	5	
		Student engagement	3	
				44

Section C-Reading Strategies

Global Strategies(Gs)

ITEM	1	2	3	4	5
GSQ1 I think about whether the content of the on-line text fits my reading purpose.					
GSQ2 When reading on-line, I decide what to read thoroughly and what to ignore.					
GSQ3I I use context clues to help me better understand what I am reading online					
GSQ4 I use typographical features like boldface and italics to identify key information.					
GSQ5 I try to guess what the content of the on-line text is about when I read.					
GSQ6 I scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.					

Problem--Solving Strategies (Ps)

ITEM	1	2	3	4	5
PSSQ1 I try to get back on track when I lose concentration.					
PSSQ2 I adjust my reading speed according to what I am reading on-line.					
PSSQ3 I stop from time to time and think about what I am reading on-line.					
PSSQ4 When on-line text becomes difficult, I re-read it to increase my understanding.					
PSSQ5 When I read on-line, I guess the meaning of unknown words or phrases.					
PSSQ6 I can distinguish between fact and opinion in on-line texts.					

Support Strategies (Ss)

ITEM	1	2	3	4	5
SSQ1 I take notes while reading on-line to help me understand what I read.					
SSQ2 I use reference materials (e.g. an on-line dictionary) to help me understand what I read on-line.					
SSQ3 I paraphrase (restate ideas in my own words) to better understand what I read on-line.					
SSQ4 I ask myself questions I like to have answered in the on-line text.					
SSQ5 When reading on-line, I translate from English into my native language.					
SSQ6 When reading on-line, I think about information in both English and my mother tongue.					

Section B-ChatGPT

Critical Thinking Abilities (Ct)

ITEM	1	2	3	4	5
CTQ1 I usually need clarification on the precision and reliability of information provided by ChatGPT, which enhances my critical thinking skills.					
CTQ2 ChatGPT's responses made me doubt their validity, leading me to seek further clarification or evidence.					
CTQ3 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.					
CTQ4 I need clarification about the accuracy of ChatGPT's output, which often encourages me to evaluate the information and conduct additional research independently.					

Academic Achievements (Aa)

ITEM	1	2	3	4	5
AAQ1 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.					
AAQ2 ChatGPT brings innovative ideas that are ready to be shared with students.					
AAQ3 Students can anticipate robust writing guidance from ChatGPT.					
AAQ4 ChatGPT has improved my academic performance.					

ChatGPT Usage (Cu)

ITEM	1	2	3	4	5
CQ1 ChatGPT is a state-of-the-art writing model that is favorably used today.					
CQ2 Students seek help from ChatGPT's assistance in composing essays and articles.					
CQ3 ChatGPT helps students in English language translation.					

CQ4 Employing ChatGPT significantly improves human productivity.					
CQ5 The advent of ChatGPT marks a groundbreaking transformation in Natural Language Processing capabilities.					

Student Engagement (Se)

ITEM	1	2	3	4	5
SEQ1 ChatGPT is more interactive, human-like, and engaging for the students.					
SEQ2 ChatGPT increases confidence in my ability to conduct research/to search for materials.					
SEQ3 ChatGPT is easy to use and more engaging for me.					