Reading With ChatGPT: A Constructivist Perspective

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DOI: https://doi.org/10.47772/IJRISS.2026.101000267

Received: 13 October 2026; Accepted: 18 October 2026; Published: 01 November 2026

ABSTRACT

Reading comprehension remains a central objective of language education and in second and foreign language contexts, reading is not merely a process of decoding written symbols but also an active cognitive activity through which learners interpret, evaluate, and synthesize information. Research focusing specifically on reading-related outcomes has produced encouraging yet cautious findings. This study was done to explore learners' perceptions on the use of ChatGPT for reading. This is a quantitative study with a convenient sample of 128 participants responding to the survey. The survey consisted of four sections (Section A: Demographic profile, Section B: Schema, Section C: Active Engagement and Section D: Scaffolding). The findings indicated that gender did not significantly influence learners' perceptions of scaffolding, schema, or active knowledge construction when reading with ChatGPT. Taken together with the scaffolding, schema and active knowledge construction, the findings suggest that reading with ChatGPT is characterized by learners' positive perceptions of instructional support, strategic engagement with texts, and active participation in meaning-making processes.

Keywords: ChatGPT, reading comprehension, learner perceptions, scaffolding, schema theory.

INTRODUCTION

Background of Study

Reading comprehension remains a central objective of language education because it enables learners to construct meaning from texts, integrate new information with prior knowledge, and develop higher-order thinking skills. In second and foreign language contexts, reading is not merely a process of decoding written symbols but also an active cognitive activity through which learners interpret, evaluate, and synthesize information. As digital technologies increasingly shape educational practices, researchers and educators have explored how emerging artificial intelligence (AI) tools can support reading development. Among these technologies, ChatGPT has attracted considerable attention because of its ability to generate human-like responses, provide explanations, answer questions, and engage learners in interactive dialogue. The growing integration of generative AI into educational settings has prompted renewed discussions about how reading can be supported through technology-mediated learning environments. (Kintsch, 1998; Kasneci et al., 2023; Lo, 2023).

The present study is grounded in several key concepts associated with constructivist learning. ChatGPT, developed by OpenAI, is a large language model capable of generating contextually relevant responses based on user prompts and conversational interactions. Reading comprehension refers to the process through which readers construct meaning by integrating textual information with existing knowledge structures. Within constructivist theory, scaffolding refers to the temporary support provided to learners as they perform tasks that would otherwise be difficult to accomplish independently, while schema refers to the organized knowledge structures that readers use to interpret and understand new information. Active knowledge construction, a central principle of constructivism, emphasizes that learning occurs when individuals actively engage with information,

connect new experiences to prior knowledge, and negotiate meaning through interaction. These concepts collectively suggest that learning is enhanced when learners participate in guided, interactive, and meaning-making activities rather than passively receiving information (Vygotsky, 1978; Bruner, 1978; Anderson & Pearson, 1984; Carrell & Eisterhold, 1983; Piaget, 1972).

Recent scholarship indicates that ChatGPT is increasingly being used in language learning and instruction. Studies have reported its use for generating learning materials, providing feedback, supporting vocabulary development, facilitating writing activities, and engaging learners in conversational practice. In language classrooms, ChatGPT has also been employed as an interactive learning partner capable of responding to learners' questions, adapting explanations to different proficiency levels, and providing individualized assistance. Such applications align with constructivist views of learning because they allow learners to interact with information, receive immediate feedback, and participate in dialogue-driven meaning making. Reviews of the literature further suggest that language educators are exploring ways to integrate ChatGPT into pedagogical practices while balancing opportunities for learner support with concerns regarding accuracy, ethics, and overreliance on AI-generated content.

Research focusing specifically on reading-related outcomes has produced encouraging yet cautious findings. Emerging studies suggest that ChatGPT can support reading activities by generating comprehension questions, simplifying complex texts, providing contextual explanations, and offering personalized assistance during reading tasks. For example, AI-supported reading environments have been designed to generate reading questions tailored to learners' proficiency levels, while other studies have reported positive effects of AI-assisted text adaptation on reading comprehension and inferencing. Reviews of the literature similarly indicate that ChatGPT may contribute to learner engagement, reading support, and individualized instruction. However, findings remain mixed, and researchers continue to note variations in research design, participant characteristics, educational contexts, and measurement approaches. As a result, the overall impact of ChatGPT on reading comprehension cannot yet be considered conclusively established.

Despite the rapid growth of studies on ChatGPT in education, the topic remains important for several reasons. First, much of the existing literature has concentrated on writing, assessment, feedback, and general language learning rather than reading comprehension specifically. Second, many studies have focused on technological capabilities and user perceptions instead of examining the learning processes that occur when learners interact with AI tools. Third, recent reviews have identified the need for stronger theoretical grounding, more diverse educational contexts, and greater attention to pedagogical implications. Consequently, there remains a need to move beyond questions of whether ChatGPT can be used in education toward understanding how it supports learning and knowledge construction.

From a constructivist perspective, the educational value of ChatGPT extends beyond its ability to provide information. The more significant question concerns how learners use AI-mediated interactions to build understanding, activate prior knowledge, engage in inquiry, and develop reading comprehension. While current studies have documented various applications of ChatGPT in language learning, fewer investigations have examined its role through the theoretical lenses of scaffolding, schema activation, and active knowledge construction. This gap suggests the need for research that explores reading with ChatGPT not simply as a technological innovation but as a learning process shaped by constructivist principles. Such a perspective may contribute to a deeper understanding of how AI-supported interactions influence reading comprehension and learner engagement in contemporary educational settings.

Statement of Problem

The emergence of ChatGPT has generated considerable interest in language education, particularly in its potential to support learning through interactive dialogue, personalized feedback, and adaptive instructional assistance. Empirical studies and systematic reviews have generally reported positive outcomes associated with ChatGPT-supported learning, including improvements in language practice, learner engagement, self-directed learning, and academic performance (Li, 2024; Lo et al., 2024). In reading-related contexts, ChatGPT has been used to generate comprehension questions, provide explanations, adapt reading materials, and support

individualized learning experiences (Wang et al., 2023; Balantekin, 2025). However, the reported benefits vary across educational settings, learner groups, and instructional designs, suggesting that the effectiveness of ChatGPT is influenced by factors beyond the technology itself.

One area requiring further clarification concerns the role of ChatGPT as a scaffolding tool. Existing studies frequently describe ChatGPT as providing instructional guidance, feedback, and support tailored to learners' needs. Such functions appear consistent with constructivist notions of scaffolding, where learners receive temporary assistance while developing independent competence. However, empirical investigations differ in how scaffolding is conceptualized and implemented. Some studies emphasize personalized questioning and adaptive support mechanisms (Wang et al., 2023), whereas others focus on learner perceptions of assistance and usability (Tram, 2024). Consequently, it remains unclear whether reported improvements result from genuine, scaffolded learning processes or from increased access to information and feedback. The variation in conceptualization creates uncertainty regarding the specific mechanisms through which ChatGPT facilitates learning.

A similar issue can be observed in research related to schema activation and reading comprehension. Reading comprehension theories emphasize that learners construct meaning by connecting new textual information with existing knowledge structures. While ChatGPT has been used to provide contextual explanations, elaborations, and personalized prompts that may support schema activation, most empirical studies evaluate learning outcomes rather than the cognitive processes underlying those outcomes. Research has generally focused on whether learners perform better after interacting with ChatGPT rather than examining how prior knowledge is activated, modified, or integrated during reading activities. As a result, the relationship between ChatGPT-supported interactions and schema-based comprehension processes remains insufficiently explained within the current literature.

Questions also remain regarding the extent to which ChatGPT promotes active knowledge construction. Constructivist learning theory emphasizes that learners actively generate meaning through inquiry, reflection, interaction, and interpretation. Although many studies characterize ChatGPT as an interactive learning partner, evidence regarding active knowledge construction is less conclusive. Existing investigations frequently assess learner satisfaction, perceived usefulness, engagement, or achievement outcomes (Li, 2024; Lo et al., 2024) rather than examining how learners negotiate meaning, formulate interpretations, or construct understanding during interactions with AI-generated responses. Consequently, positive learning outcomes do not necessarily demonstrate that active knowledge construction has occurred, creating a gap between reported educational benefits and the theoretical processes assumed to produce them.

Another issue concerns the contextual and population-related limitations of existing research. Recent reviews indicate that studies on ChatGPT in language education are concentrated in specific educational environments, particularly English as a Foreign Language (EFL) context (Li, 2024; Lo et al., 2024). Many investigations also involve relatively homogeneous learner groups and short-term implementations. Furthermore, variations in proficiency levels, learning objectives, instructional settings, and demographic characteristics make it difficult to determine whether findings can be generalized across different educational contexts. Evidence from reading-related studies similarly remains concentrated within learner populations and instructional designs (Balantekin, 2025; Aditia, 2025), limiting understanding of how learner characteristics may influence the effectiveness of ChatGPT-assisted reading.

These limitations have been acknowledged in recommendations for future research. Systematic reviews consistently call for studies that move beyond evaluating technological capabilities and learner perceptions toward examining the pedagogical and cognitive processes underlying AI-supported learning (Li, 2024; Fang et al., 2024; Lo et al., 2024). Researchers have also recommended stronger theoretical grounding, broader contextual representation, and closer examination of how instructional design influences learning outcomes. Similarly, studies focusing on reading support systems have highlighted the need to investigate how learners interact with AI-generated guidance during reading tasks and how such interactions contribute to comprehension development (Wang et al., 2023).

Taken together, the literature indicates that while ChatGPT has demonstrated potential as a learning support tool, important questions remain regarding the constructivist processes through which learning occurs. Existing research has largely focused on outcomes such as performance, engagement, and perceptions, whereas the roles of scaffolding, schema activation, and active knowledge construction have received comparatively less direct examination. Consequently, a theoretical gap exists between the documented educational applications of ChatGPT and the constructivist mechanisms that may explain its influence on reading comprehension. The present study addresses this gap by examining reading with ChatGPT through a constructivist perspective, focusing specifically on how scaffolding, schema activation, and active knowledge construction contribute to learners' reading experiences and comprehension development.

Objective of the Study and Research Questions

This study is done to explore learners' perceptions on the use of ChatGPT for reading. Specifically, this study is done to answer the following questions;

1.0 Is there a significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across gender?

2.0 $H_{o1:}$ There is no significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across gender

3.0 Is there a significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across English proficiency

4.0 $H_{o2:}$ There is no significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across English proficiency

5.0 How do learners' perception on Scaffolding in reading using ChatGPT?

6.0 How do learners perceive Schema in reading?

7.0 How do learners perceive Active Knowledge construction in reading?

8.0 Is there a significant relationship between scaffolding and schema?

9.0 H_{03}: There is no significant relationship between scaffolding and schema

10.0 Is there a significant relationship between scaffolding and active knowledge construction?

11.0 H_{04}: There is no significant relationship between scaffolding and schema

12.0 Is there a significant relationship between schema and active knowledge construction?

Theoretical Framework of the Study

This study is grounded in Constructivist Learning Theory, drawing on the contributions of Piaget (1972), Vygotsky (1978), and Bruner (1990). Constructivism conceptualises learning as an active process through which individuals construct knowledge by integrating new information with existing knowledge and experiences. Rather than viewing learners as passive recipients of information, constructivist perspectives emphasise their active involvement in interpreting, evaluating, and constructing meaning. In reading comprehension, this perspective is particularly relevant because readers must integrate textual information with their prior knowledge to develop an understanding of the text.

Vygotsky's (1978) sociocultural perspective provides a useful foundation for understanding the role of interaction and instructional support in learning. From this perspective, learning is mediated through language,

social interaction, and cultural tools that facilitate cognitive development. In the context of the present study, ChatGPT is conceptualised as a technology-mediated resource through which learners can seek explanations, clarify unfamiliar concepts, ask questions, and explore interpretations of reading materials. However, the educational value of these interactions depends on how learners engage with the information provided and use it to construct their own understanding.

Three interrelated constructs underpin the theoretical framework of this study: scaffolding, schema, and active knowledge construction. These constructs represent complementary dimensions of the reading process from a constructivist perspective.

First, **scaffolding** is informed by the work of Wood, Bruner, and Ross (1976), who conceptualised scaffolding as temporary assistance that enables learners to accomplish tasks that may be difficult to complete independently. This concept is also associated with Vygotsky's (1978) Zone of Proximal Development, which highlights the role of appropriate guidance in facilitating learning. In ChatGPT-assisted reading, scaffolding refers to learners' perceptions of the support available through AI-generated explanations, clarification, feedback, and other forms of assistance. In this study, scaffolding is examined through learners' perceptions of critical thinking abilities, academic achievement, ChatGPT usage, and student engagement, as represented in the survey instrument.

Second, **schema theory** explains how readers use existing knowledge structures to interpret and comprehend new information. Drawing on Anderson and Pearson (1984) and Carrell and Eisterhold (1983), reading comprehension is understood as an interactive process in which textual information relates to readers' prior knowledge and experiences. In the present study, schema is operationalised through global reading strategies, including predicting text content, using contextual clues, identifying relevant information, and determining whether a text meets a particular reading purpose. These strategies reflect the ways learners draw upon existing knowledge and establish a foundation for interpreting reading materials.

Third, **active knowledge construction** reflects the constructivist principle that learners develop understanding through active engagement, interpretation, reflection, and problem-solving. Piaget (1972) emphasised the active construction of knowledge through interaction with new experiences, while Bruner (1990) highlighted learners' participation in constructing meaning. Within the present study, active knowledge construction is examined through problem-solving and support reading strategies. These include rereading difficult passages, adjusting reading speed, inferring the meanings of unfamiliar words, paraphrasing information, consulting reference materials, and reflecting on textual content. Such strategies represent learners' active involvement in making sense of information rather than simply receiving explanations from ChatGPT.

Taken together, these three constructs provide a theoretical basis for examining learners' perceptions of reading with ChatGPT. Scaffolding represents the perceived assistance available during reading, schema reflects the activation and application of existing knowledge, and active knowledge construction captures learners' strategic engagement in developing meaning from texts. Although these constructs are conceptually distinct, they may be related in the reading process. For example, learners who perceive ChatGPT as a useful source of support may also engage in problem-solving activities, while learners who frequently use global reading strategies may be more inclined to participate in active meaning-making.

Accordingly, the present study examines learners' perceptions of scaffolding, schema, and active knowledge construction, as well as the relationships among these constructs. It also investigates whether perceptions differ according to gender and self-rated English proficiency. These demographic comparisons provide additional insight into whether learners with different characteristics report different experiences of ChatGPT-assisted reading.

The theoretical framework therefore positions Constructivist Learning Theory as the overarching perspective and scaffolding, schema, and active knowledge construction as the principal constructs investigated in the study. By examining these constructs together, the study seeks to provide a theoretically informed understanding of how learners perceive instructional support, reading strategies, and meaning-making processes when using ChatGPT for reading.

Past Studies

ChatGPT in Language Learning and Reading Instruction

The growing use of ChatGPT in language education has prompted researchers to examine how generative artificial intelligence can support learning beyond the provision of information. In language classrooms, ChatGPT offers opportunities for learners to obtain explanations, ask follow-up questions, explore unfamiliar concepts, and receive responses tailored to their immediate learning needs. These functions have attracted interest among language educators, particularly in relation to self-directed learning, instructional support, and the development of language skills. However, the educational value of ChatGPT depends on more than its ability to generate responses. It also depends on how learners interpret, evaluate, and use the information provided during learning activities.

A systematic review by Li et al. (2024), which examined 36 publications on ChatGPT in language education published between November 2022 and November 2023, provides an overview of the early development of this research area. The review identified several applications of ChatGPT, including self-directed language learning, content generation, and support for teaching activities. It also found that research was concentrated in higher education and that empirical investigations formed a substantial part of the literature. Nevertheless, the authors identified several areas requiring further investigation, including the need for more diverse research contexts, longitudinal studies, broader examination of stakeholder perceptions, and closer assessment of feedback quality. These observations suggest that, although ChatGPT has become an important subject of language education research, questions remain about how learners experience and benefit from its use in particular language-learning activities. A related review by Yang and Li (2024) examined 44 studies on ChatGPT in second-language learning. The review considered the technology, participants, research objectives, theoretical perspectives, methodologies, and reported outcomes. Learner perceptions and writing skills emerged as prominent areas of investigation, indicating that much of the early research concentrated on how learners responded to ChatGPT and how it could be incorporated into language-learning activities. While this body of research provides a useful foundation for understanding ChatGPT-assisted language learning, the prominence of writing-related research also highlights the importance of investigating other language skills. Reading deserves particular attention because comprehension involves more than obtaining explanations or identifying information. Readers must interpret textual evidence, connect ideas, draw inferences, and integrate new information with what they already know. Taken together, these reviews establish the relevance of ChatGPT in language education while pointing to the need for more focused investigations of individual language skills and the processes through which learning takes place. For the present study, this distinction is important. Rather than examining ChatGPT as a general language-learning tool, the study focuses specifically on learners' perceptions of reading with ChatGPT through the constructs of scaffolding, schema, and active knowledge construction.

ChatGPT and Reading Comprehension

Reading comprehension provides a particularly relevant context for examining the educational applications of ChatGPT. In second-language learning, readers may encounter unfamiliar vocabulary, complex sentence structures, implicit meanings, and concepts that require background knowledge. ChatGPT can potentially assist with these difficulties by explaining unfamiliar terms, simplifying passages, generating comprehension questions, and providing contextual information. Such functions may make reading materials more accessible, although their usefulness depends on the accuracy of the responses and the extent to which learners continue to engage directly with the original text. Direct empirical evidence is provided by Balantekin's study of ChatGPT-4-generated reading materials. Conducted with 106 fourth-grade students in two public primary schools in Türkiye, the study employed a sequential explanatory mixed-method design. Its quantitative component used a Solomon four-group experimental design, while the qualitative component involved a case study. The findings indicated statistically significant differences favouring the experimental groups in reading comprehension and reading motivation, with reported high effect sizes. The study therefore offers encouraging evidence that texts generated through ChatGPT can support reading-related outcomes in a structured educational setting.

Nevertheless, the findings need to be interpreted in relation to the study's context and intervention. Balantekin's research involved primary school learners who worked with texts generated from their own prompts. Its results cannot automatically be generalised to university students who use ChatGPT to understand existing reading materials. The distinction is important because generating a text and comprehending a text present different learning demand. When learners use ChatGPT to support the reading of an existing passage, they may seek clarification, compare interpretations, activate background knowledge, or reconsider an initial understanding. These activities concern not only the outcome of reading but also the cognitive processes through which readers develop meaning. More broadly, a systematic review and meta-analysis of experimental studies by Wang et al. (2025) examined the effects of ChatGPT on student learning across educational contexts. The review reported positive overall effects on academic performance, affective-motivational outcomes, and higher-order thinking propensities. However, the authors also highlighted methodological limitations in the underlying studies, including insufficient attention to statistical power and concerns about post-intervention assessment. They recommended greater emphasis on objective measures of learning and longer-term investigations. Although these findings provide broader evidence of ChatGPT's educational potential, they do not establish that every application of the technology will produce comparable benefits in reading comprehension.

The available evidence therefore supports a cautious interpretation of ChatGPT-assisted reading. The technology may help learners access and interpret textual information, but its educational contribution cannot be established solely by the availability of explanations or by positive perceptions of its usefulness. Further investigation is needed into how learners perceive and engage with the support provided during reading. The present study addresses this concern by examining reading with ChatGPT from a constructivist perspective rather than treating reading comprehension as an outcome that can be explained by technology use alone.

ChatGPT as a Source of Instructional Scaffolding

Scaffolding is a relevant concept in research on ChatGPT-assisted reading because comprehension difficulties do not always arise from a lack of information. Learners may also need assistance in interpreting difficult passages, identifying relationships between ideas, or deciding how to approach unfamiliar material. ChatGPT can provide explanations, examples, and responses to follow-up questions, potentially allowing learners to seek assistance at the point where a difficulty arises. Such interaction creates opportunities for individualised support that may be difficult to provide continuously in a conventional classroom.

However, the availability of assistance should not be equated automatically with effective scaffolding. Wood, Bruner, and Ross (1976) conceptualised scaffolding as support that enables learners to perform tasks that would otherwise be beyond their independent capabilities. From this perspective, the purpose of assistance is not simply to supply the correct answer but to help learners make progress towards greater competence. Vygotsky's (1978) concept of the Zone of Proximal Development similarly emphasises the role of guidance in enabling learners to accomplish tasks they cannot yet complete independently.

These perspectives offer a useful basis for examining ChatGPT in reading instruction. For example, a learner who encounters an unfamiliar expression may ask ChatGPT for an explanation, request an example, and then return to the original passage to reconsider its meaning. In this situation, the technology provides an opportunity for guided understanding while the learner remains involved in interpreting the text. By contrast, if the learner simply copies a generated summary without examining the original passage, the interaction may provide immediate access to information without necessarily supporting independent comprehension. The distinction between assistance and learning is therefore central to understanding ChatGPT's potential role as a scaffold.

Research on ChatGPT in language education has increasingly recognised the potential of the technology to provide personalised assistance and facilitate self-directed learning. The systematic review by Li et al. (2024), for instance, identified instructional and learning support among the applications reported in the literature. Nevertheless, the diversity of research objectives and methods means that general findings about ChatGPT's usefulness do not establish whether its support consistently meets the theoretical requirements of scaffolding. In particular, the extent to which assistance responds to learners' specific difficulties and encourages independent engagement requires closer examination.

In the present study, scaffolding is investigated through learners' perceptions of ChatGPT-related support, including critical thinking, academic achievement, technology usage, and student engagement as represented in the survey instrument. These dimensions provide insight into how respondents perceive the assistance available when using ChatGPT. They should not, however, be interpreted as direct evidence that independent reading competence has improved. By examining scaffolding alongside schema and active knowledge construction, the study seeks to establish whether perceived instructional support is associated with other dimensions of the reading process.

Schema Activation and Reading Strategies

Reading comprehension is shaped by the interaction between textual information, and the knowledge readers bring to a text. Schema theory provides a theoretical explanation for this process by emphasising the role of organised prior knowledge in interpreting new information. Anderson and Pearson (1984) explained that comprehension involves the interaction of information presented in a text with existing knowledge structures. Similarly, Carrell and Eisterhold (1983) highlighted the importance of background knowledge in second-language reading, demonstrating the relevance of schema theory to language-learning contexts.

The application of schema theory to reading suggests that comprehension involves more than recognising words and sentences. Readers draw on their experiences, expectations, and knowledge of the world to anticipate content, interpret contextual clues, and establish connections between ideas. These processes are particularly relevant when learners encounter texts containing unfamiliar subject matter or concepts that are not explicitly explained. When appropriate background knowledge is available and activated, readers have a basis for interpreting information beyond its literal wording.

Reading strategy research offers a practical way of examining some of these processes. In their work on online reading strategies, Amer, Al Barwani, and Ibrahim (2010) examined learners' use of strategies associated with global reading, problem-solving, and support. Global strategies involve planning and monitoring reading, such as identifying a reading purpose, previewing content, and deciding which information deserves closer attention. Although these strategies are not identical to schema activation, they are relevant to the ways readers draw on prior knowledge and establish an initial understanding of a text.

ChatGPT may provide opportunities to support these activities by offering background explanations, clarifying contextual information, or responding to questions about a topic before or during reading. For example, learners may use the technology to explore an unfamiliar concept before returning to a passage, or they may ask for clarification when the meaning of a section remains unclear. Such activities could help learners establish connections between what they already know and what they encounter in a text. However, whether these interactions genuinely activate or develop learners' schemas cannot be assumed merely because additional information is available.

This distinction also has implications for how schema is measured. In the present study, schema is operationalised through global reading strategies, including predicting text content, using contextual clues, identifying relevant information, and considering reading purposes. These measures capture strategic reading behaviours that are theoretically relevant to the use of prior knowledge, rather than directly measuring the internal structure of a learner's knowledge. Consequently, the findings are best interpreted as evidence of learners' reported use of schema-related reading strategies when engaging with online texts.

By examining schema alongside scaffolding and active knowledge construction, the present study extends the discussion beyond the availability of background information. It considers how learners report approaching texts, interpreting content, and managing their reading while using ChatGPT. This focus is relevant because access to additional explanations does not necessarily mean that learners integrate the information into their existing understanding.

Active Knowledge Construction During ChatGPT-Assisted Reading

Constructivist perspectives regard learning as an active process in which individuals interpret new information

and develop understanding through engagement with their experiences and environment. Piaget (1972) emphasised the role of cognitive processes through which learners integrate new information into existing knowledge structures or modify those structures when new experiences cannot be readily accommodated. Vygotsky (1978), meanwhile, highlighted the importance of interaction and language in the development of understanding. Together, these perspectives provide a basis for examining reading as an activity in which learners construct meaning rather than simply receive information.

In reading, active knowledge construction can involve recognising comprehension difficulties, rereading challenging passages, making inferences, questioning interpretations, and connecting new information with existing knowledge. These activities require readers to monitor their understanding and make decisions about how to proceed when meaning is unclear. Bruner's (1990) account of learning similarly emphasises the active construction of meaning, providing a theoretical basis for examining the ways learners interpret information rather than reproduce it.

The use of ChatGPT introduces additional possibilities for such engagement. Learners can request explanations, compare alternative interpretations, ask follow-up questions, or seek clarification when an initial response does not resolve a comprehension difficulty. These exchanges may create opportunities for reflection and problem-solving. Nevertheless, the presence of interaction does not necessarily demonstrate that knowledge has been constructed. Learners may engage critically with the responses they receive, or they may accept generated explanations without further examination. The educational significance of ChatGPT therefore depends partly on the extent to which learners remain active participants in the reading process.

The distinction between interaction and active engagement is particularly important in interpreting research on learners' perceptions. A learner may regard ChatGPT as easy to use or useful for obtaining explanations without necessarily reporting frequent use of deeper reading strategies. Conversely, a learner may use the technology selectively to clarify difficult information while continuing to rely on personal judgement and established reading strategies. These different patterns of engagement suggest that perceived usefulness and active knowledge construction should be examined as related but distinct aspects of ChatGPT-assisted reading.

In the present study, active knowledge construction is examined through problem-solving and support reading strategies. Problem-solving strategies include adjusting reading speed, rereading difficult passages, regaining concentration, and inferring the meanings of unfamiliar words. Support strategies include paraphrasing, consulting reference materials, taking notes, and using other techniques to facilitate understanding. These behaviours offer an indication of how learners report managing comprehension difficulties and working towards meaning while reading online.

The distinction between these strategies also helps explain why active knowledge construction should not be reduced to the amount of interaction learners have with ChatGPT. The technology may provide assistance, but the learner's own reading decisions remain important. Examining active knowledge construction alongside scaffolding and schema therefore allows the present study to investigate whether learners' perceptions of instructional support and their reported reading strategies are associated with their engagement in meaning-making activities.

Synthesis of Past Studies and Research Gap

The studies reviewed above demonstrate that ChatGPT has become an important focus of research in language education, with applications extending to self-directed learning, instructional support, and reading-related activities. Reviews by Li et al. (2024) and Yang and Li (2024) show that researchers have examined the technology from a range of pedagogical and methodological perspectives. Balantekin's study further provides empirical evidence of improvements in reading comprehension and motivation among primary school learners participating in ChatGPT-assisted reading activities. At the same time, the broader literature indicates that findings must be interpreted in relation to the learners, instructional arrangements, research designs, and outcomes investigated.

A recurring issue across this literature is the distinction between the availability of technological support and the

learning processes that occur when learners use it. ChatGPT can generate explanations and respond to questions, but these functions alone do not establish whether learners activate relevant prior knowledge, evaluate information critically, or develop a more independent understanding of a text. Similarly, positive perceptions of usefulness should not be treated as equivalent to demonstrated improvements in reading comprehension. This distinction supports the need to investigate learners' reported experiences in relation to clearly defined theoretical constructs.

The present study addresses this issue by examining ChatGPT-assisted reading through three constructs grounded in constructivist learning perspectives: scaffolding, schema, and active knowledge construction. These constructs capture different but potentially related aspects of the reading process. Scaffolding concerns the support learners perceive when using ChatGPT; schema concerns their use of global reading strategies associated with interpreting and approaching texts; and active knowledge construction concerns their reported use of problem-solving and support strategies to develop understanding. Investigating the constructs together provides a more focused account of learners' perceptions than treating ChatGPT use as a single, undifferentiated experience.

The study also considers gender and self-rated English proficiency when examining the three constructs. These comparisons are relevant because learners may differ in their reading experiences and the strategies they report using. In addition, the examination of correlations among scaffolding, schema, and active knowledge construction makes it possible to determine whether higher scores on one construct are associated with higher scores on another. Such analyses do not establish causal relationships, but they provide evidence about how the constructs are related within the study's sample.

Accordingly, the contribution of the present study lies in its examination of the relationships among perceived scaffolding, schema-related reading strategies, and active knowledge construction within a single quantitative investigation of ChatGPT-assisted reading. Rather than attempting to establish that ChatGPT improves reading comprehension directly, the study explores how learners perceive the support and strategic processes involved in reading with the technology. This focus contributes to a more theoretically grounded discussion of ChatGPT in language education and provides a basis for further research using direct measures of reading performance, classroom observation, or longitudinal designs.

Conceptual Framework of the Study

The task of reading in an academic setting may not be easy because it involves knowledge of meaning between the reader and the text (Rahmat et.al, 2020). According to Amer, et.al (2010), readers use three main strategies: global, problem-solving, and support strategies when they read. 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, localized adjustments when text becomes difficult. These strategies, often used during reading, include adjusting reading speed, re-reading to improve understanding, guessing word meanings, and visualizing information. Support reading strategies are conscious goal-setting techniques that help readers, particularly those needing extra support, to construct meaning, analyze text structure, and improve comprehension. These days, reading academic text can be assisted by the use of ChatGPT. According to Youssef et.al. (2024), ChatGPT helps learners improve critical abilities, academic achievement, and engagement. The use of ChatGPT mirrors the construction of knowledge for the reader.

Figure 1 shows the conceptual framework of the study. This study is anchored in some components of Constructivism by Vygotsky (1978): schema, active knowledge construction and scaffolding. The concepts for Vygotsky (1978) correspond to the reading strategies by Amer et al. (2010). Schema (background knowledge) is developed when readers use their global reading strategies. Next, when readers use problem-solving and support reading strategies, they are in an active knowledge model. Lastly, the use of ChatGPT acts as a scaffolding for the readers.

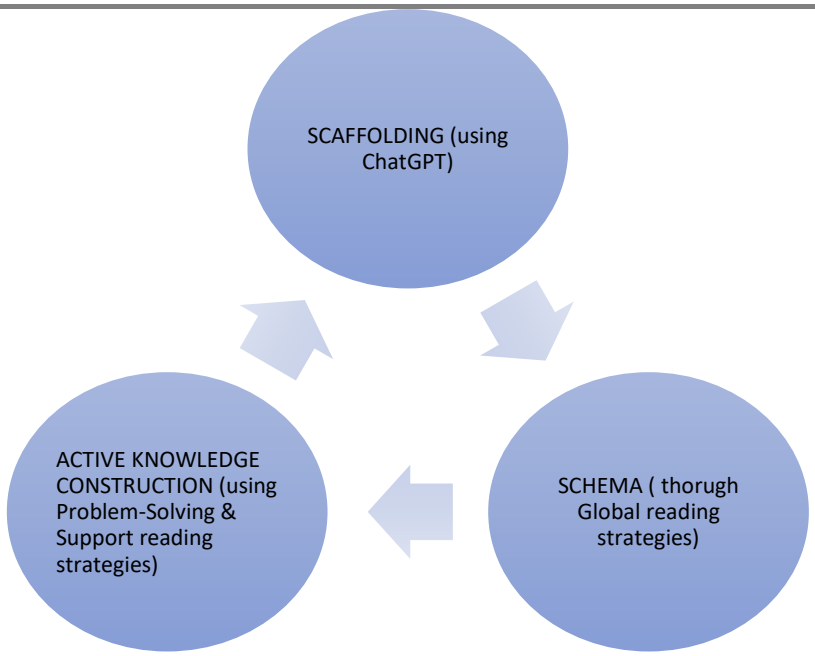

Figure 1 -Conceptual Framework of the Study: Reading and ChatGPT using Constructivism

LITERATURE REVIEW

Constructivist Learning Theory

The present study is grounded in constructivist learning theory, which views learning as an active process through which individuals construct knowledge rather than passively receive information. Constructivism emerged primarily from the works of Jean Piaget and Lev Vygotsky, whose contributions continue to influence contemporary educational research and practice. Piaget (1972, 1977) argued that learners develop knowledge through continuous interaction with their environment. According to his cognitive constructivist perspective, learning occurs when individuals assimilate new information into existing cognitive structures or accommodate those structures to incorporate new experiences. Knowledge is therefore actively constructed through cognitive engagement rather than transmitted directly from teacher to learner.

While Piaget emphasized individual cognitive development, Vygotsky (1978) highlighted the social dimensions of learning. His sociocultural perspective proposes that knowledge is constructed through interaction with others and through engagement with cultural tools that mediate thinking. Learning is viewed as a socially situated process in which language, dialogue, and collaboration play central roles in meaning making. Extending these ideas, Bruner (1966, 1990) argued that learning is facilitated when learners actively discover relationships among ideas and construct their own interpretations of information. Together, these perspectives established the foundation of constructivism as a theory that emphasizes learner agency, interaction, and meaning construction.

A central assumption of constructivism is that learners interpret new information through the lens of their existing knowledge and experiences. Learning therefore involves an ongoing process of connecting prior knowledge with new information, evaluating alternative interpretations, and refining understanding. As Palincsar (1998) explains, constructivist learning environments encourage learners to participate actively in inquiry, dialogue, and reflection rather than memorizing information provided by external sources. Knowledge emerges through engagement with ideas and experiences, making learning both cognitive and social in nature.

The emergence of ChatGPT introduces new possibilities for constructivist learning. Unlike traditional information-delivery technologies, ChatGPT enables learners to engage in dynamic dialogue, ask questions, seek clarification, and receive immediate responses. Through these interactions, learners can explore ideas, test interpretations, and refine understanding while actively engaging with textual information. From a constructivist perspective, the educational value of ChatGPT lies not merely in providing answers but in supporting processes through which learners construct meaning during reading activities. Consequently, constructivism provides an

appropriate theoretical lens for examining how learners interact with ChatGPT while developing reading comprehension.

Scaffolding Theory

Scaffolding theory provides an important extension of constructivist learning theory by explaining how learners can be supported during the knowledge-construction process. The concept originated from the work of Wood, Bruner, and Ross (1976), who described scaffolding as the temporary support provided by a more knowledgeable individual to help learners accomplish tasks beyond their current capabilities. The support is gradually withdrawn as learners gain competence and independence.

The concept is closely associated with Vygotsky's (1978) notion of the Zone of Proximal Development (ZPD), which refers to the difference between what learners can accomplish independently and what they can achieve with guidance. Within this framework, effective learning occurs when support is provided at an appropriate level to bridge the gap between existing abilities and desired performance. Scaffolding is therefore not simply assistance; rather, it is structured support that enables learners to perform increasingly complex cognitive tasks.

Research on scaffolding has expanded considerably since its introduction. Stone (1998) emphasized that scaffolding involves responsive and adaptive support that changes according to learners' needs. Similarly, Van de Pol, Volman, and Beishuizen (2010) identified contingency, fading, and transfer of responsibility as defining characteristics of effective scaffolding. These characteristics distinguish scaffolding from simple information provision because learners remain actively engaged in solving problems and constructing understanding.

Within ChatGPT-assisted reading environments, AI can potentially function as a scaffold by providing explanations, clarifications, guiding questions, summaries, and feedback that support comprehension. For example, ChatGPT can simplify difficult passages, explain unfamiliar concepts, and respond to learners' questions in real time. Such support may help learners navigate texts that would otherwise exceed their current comprehension abilities. However, from a constructivist perspective, the effectiveness of ChatGPT as a scaffold depends on whether its assistance promotes learner engagement and independent meaning construction rather than creating dependence on AI-generated responses. Therefore, scaffolding theory provides a useful framework for examining how ChatGPT supports reading comprehension processes.

Schema Theory

Schema theory provides a cognitive explanation of how readers comprehend and interpret texts. The origins of schema theory can be traced to Bartlett's (1932) work on memory, which proposed that individuals interpret new experiences using organized knowledge structures derived from previous experiences. These knowledge structures, later termed schemas, influence how information is perceived, processed, stored, and retrieved.

Rumelhart (1980) further developed schema theory by describing schemas as fundamental cognitive structures that organize knowledge and guide understanding. According to this perspective, comprehension is not achieved solely through processing textual information. Rather, readers actively construct meaning by integrating information from the text with relevant prior knowledge. Consequently, comprehension depends not only on the characteristics of the text but also on the knowledge that readers bring to the reading process.

The application of schema theory to reading was advanced by Anderson and Pearson (1984), who argued that comprehension results from interactions between textual information and existing knowledge structures. Similarly, Carrell and Eisterhold (1983) demonstrated the importance of schema activation in second-language reading, suggesting that readers are more likely to understand and interpret texts successfully when relevant background knowledge is activated. Kintsch's (1998) model of comprehension further emphasizes the integration of textual information with prior knowledge during meaning construction.

ChatGPT may contribute to schema activation by helping learners connect new information with existing knowledge. Through interactive questioning, contextual explanations, and elaborative discussion, ChatGPT can encourage learners to recall relevant experiences and concepts before, during, and after reading. In addition,

learners may use ChatGPT to obtain background information that expands existing schemas and facilitates comprehension of unfamiliar topics. Consequently, schema theory provides a useful framework for understanding how AI-supported interactions may influence reading comprehension.

Active Knowledge Construction

Active knowledge construction represents a central principle of constructivist learning. Rather than viewing learning as the acquisition of information transmitted from external sources, constructivist theorists argue that learners actively build understanding through interaction, reflection, interpretation, and problem solving. Knowledge is therefore constructed rather than received.

Piaget (1972) proposed that learners construct knowledge through processes of assimilation and accommodation as they encounter new experiences. Learning occurs when individuals actively reorganize their cognitive structures to achieve equilibrium between existing knowledge and new information. Vygotsky (1978) extended this view by emphasizing the role of social interaction in cognitive development. From his perspective, learners construct understanding through dialogue and collaborative meaning making before internalizing new knowledge.

Bruner (1990) similarly argued that learning involves the active creation of meaning. Rather than reproducing information exactly as presented, learners interpret information according to their existing beliefs, experiences, and purposes. Jonassen (1999) further emphasized that meaningful learning occurs when learners engage in authentic inquiry, reflection, and problem-solving activities that require them to construct rather than reproduce knowledge.

In the context of ChatGPT-assisted reading, active knowledge construction may occur when learners engage critically with AI-generated responses, formulate questions, evaluate information, compare interpretations, and integrate new ideas into existing understanding. The learning process becomes more meaningful when learners use ChatGPT as a conversational partner that supports inquiry and reflection rather than as a source of ready-made answers. Therefore, active knowledge construction provides an important lens for examining how learners interact with ChatGPT during reading activities.ChatGPT as a Reading Support Tool

Recent research has increasingly examined ChatGPT as a tool for supporting language learning and reading-related activities. Across educational contexts, ChatGPT has been used to provide explanations, answer questions, generate learning materials, offer feedback, and facilitate individualized learning experiences. Systematic reviews have consistently reported that educators and learners perceive ChatGPT as useful for supporting learning processes because it enables immediate access to information and interactive dialogue (Li, 2024; Lo et al., 2024). These functions distinguish ChatGPT from traditional educational technologies by allowing learners to engage in continuous exchanges that can be adapted to their learning needs. Despite these reported benefits, studies differ in their interpretations of how ChatGPT supports learning. Some researchers view its value primarily in terms of personalized assistance and learner autonomy, whereas others emphasize its potential role in facilitating instructional support and guided inquiry (Fang et al., 2024; Yan et al., 2024). Such differences suggest that ChatGPT's effectiveness depends not only on its technological capabilities but also on how it is integrated into instructional activities. Moreover, many studies rely heavily on learner perceptions and self-reported experiences, making it difficult to determine the extent to which perceived support translates into measurable learning outcomes. Consequently, while existing evidence suggests that ChatGPT can function as a useful reading support tool, further investigation is needed to understand the learning processes through which such support influences reading development. For the present study, these findings suggest that ChatGPT should not be viewed merely as an information source but as an interactive tool whose educational value may emerge through learner engagement with reading tasks. Understanding how learners utilize this support remains essential for explaining its contribution to reading comprehension.

ChatGPT and Reading Comprehension

Research investigating the relationship between ChatGPT and reading comprehension has generally reported positive outcomes, although the evidence remains varied across contexts and methodologies. Existing studies suggest that ChatGPT can assist learners by generating comprehension questions, simplifying complex texts,

clarifying unfamiliar concepts, and supporting reading motivation. For example, Balantekin (2025) reported improvements in both reading comprehension and reading motivation when learners engaged with reading materials generated through ChatGPT-assisted activities. These findings are consistent with broader reviews that highlight the potential of ChatGPT to enhance learning performance and cognitive engagement (Li, 2024; Wang et al., 2025). However, the evidence is not entirely consistent. Meta-analytic findings indicate that the effects of ChatGPT vary substantially across studies, suggesting that outcomes are influenced by contextual factors, implementation strategies, and learner characteristics (Wang et al., 2025). Furthermore, many investigations have been conducted over relatively short periods, limiting understanding of whether improvements in reading comprehension are sustained over time. Differences in research designs, outcome measures, and instructional interventions also make comparisons across studies difficult.These methodological variations indicate that positive outcomes should be interpreted cautiously. While existing research provides encouraging evidence regarding ChatGPT's potential to support reading comprehension, questions remain regarding the mechanisms through which such improvements occur. The present study addresses this issue by examining reading with ChatGPT through a constructivist lens rather than focusing exclusively on performance outcomes.

ChatGPT as a Scaffolding Mechanism

A recurring theme in the literature is the potential of ChatGPT to function as a form of instructional scaffolding. Reviews of ChatGPT in language education frequently describe the technology as providing adaptive support through explanations, feedback, examples, and guided questioning (Li, 2024; Lo et al., 2024). These features align with traditional conceptions of scaffolding in which learners receive temporary assistance while developing greater independence and competence.Nevertheless, significant differences exist in how scaffolding is conceptualized and operationalized across studies. Some researchers emphasize personalized support and adaptive interaction, while others focus on the efficiency and accessibility of AI-generated assistance. As a result, the term scaffolding is often used broadly without direct examination of whether the support provided reflects key scaffolding principles such as contingency, fading, and transfer of responsibility. Consequently, many studies infer the presence of scaffolding based on technological functions rather than measuring scaffolded learning processes directly.This limitation has important implications for educational research. If ChatGPT is to be understood as a scaffold, researchers must examine not only the support provided but also how learners interact with that support during learning activities. The present study responds to this need by investigating ChatGPT-assisted reading from a constructivist perspective that emphasizes the role of guided learning and learner engagement in meaning construction.

Constructivist Interpretations: Schema Activation and Knowledge Construction

Although constructivist concepts frequently appear in discussions of AI-assisted learning, direct empirical examination of schema activation and active knowledge construction remains relatively uncommon. Existing studies suggest that ChatGPT may facilitate learning by encouraging learners to ask questions, seek clarification, and engage in dialogue that connects new information with existing knowledge. Such interactions are consistent with theoretical explanations derived from schema theory and constructivist learning theory.Several reviews have argued that ChatGPT's conversational capabilities may support deeper engagement with learning materials because learners are able to explore ideas interactively rather than passively receive information (Fang et al., 2024; Lo et al., 2024). Through questioning and elaboration, learners may activate prior knowledge and establish connections between existing cognitive structures and new information. Similarly, interactive exchanges may encourage reflection, interpretation, and meaning making, which are central characteristics of active knowledge construction.However, these interpretations are largely theoretical rather than empirically verified. Most studies evaluate outcomes such as achievement, satisfaction, motivation, or perceived usefulness rather than directly measuring schema activation or knowledge-construction processes. Consequently, current evidence provides only indirect support for claims that ChatGPT promotes constructivist learning mechanisms. This gap highlights the importance of examining how learners engage cognitively with ChatGPT during reading activities rather than focusing solely on instructional outcomes.

METHODOLOGY

This quantitative study is done to explore reading and ChatGPT. A convenient sample of 128 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	Never
2	rarely
3	Sometimes
4	Often
5	Always

Table 2- Distribution of Items in the Survey

SECTION	VARIABLE	CONSTRUCT	NO OF ITEMS	TOT
B	SCHEMA	Global	6	.765
C	ACTIVE ENGAGEMENT	Problem-Solving	6	12 (.841)
		Support	6	
D	SCAFFOLDING (CHAT GPT)	Critical thinking abilities	4	16(.926)
		Academic achievement	4	
		ChatGPT usage	5	
		Student engagement	3	
				34(.932)

Table 2 shows the distribution of items in the survey. Section B has 6 items on Schema. Section C has 12 items on Active engagement. Section D has 16 items on Scaffolding.

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 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 .765 for schema, .841 for active engagement, and .926 for scaffolding. The overall Cronbach alpha for all 34 items is .932., 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.

Demographic Analysis

According to Zienefuss, et.al (2021), research report demographic data in percentages to establish sample representatives and allow for generalizability 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	27%
		Female	73%
2	Self-Rate English proficiency	Average	39%
		Good	61%

Table 4 presents the demographic profile of the respondents based on gender and self-rated English proficiency. The distribution of respondents by gender showed that the majority were female, comprising 73% of the sample, while male respondents accounted for 27%. In terms of self-rated English proficiency, 61% of the respondents rated their English proficiency as good, whereas 39% rated their proficiency as average. This indicates that a larger proportion of the participants perceived themselves as having a good level of English proficiency. The demographic data provide an overview of the characteristics of the respondents who participated in this study. The sample consisted predominantly of female respondents and learners who perceived their English proficiency as good. In summary, the respondents were mainly female (73%), with male respondents representing 27% of the sample. Regarding English proficiency, many respondents (61%) reported having good English proficiency, while 39% reported having average proficiency.

Descriptive Statistics (mean value)

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.

Inferential Statistics (significant difference)

According to Shah (2023), 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, 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, T-test is used to identify significant differences. The output of a t-test provides a p-value (significance value). If this p-value is below a pre-determined threshold (often 0.05), it indicates a statistically significant difference, allowing researchers to conclude the populations from which their samples were drawn.

FINDINGS

Findings for Gender

This section presents data to answer the research question 1: Is there a significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across gender?

H_{o1}: There is no significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across gender

Table 5: T-Test for Gender

Group Statistics

	Q1GENDER	N	Mean	Std. Deviation	Std. Error Mean
SCAFFOLDING	MALE	35	3.6464	.56208	.09501
	FEMALE	93	3.3185	.98499	.10214
SCHEMA	MALE	35	3.8238	.61959	.10473
	FEMALE	93	3.9319	.53963	.05596
ACTIVE_ENGAGEMENT	MALE	35	3.7452	.54568	.09224
	FEMALE	93	3.7769	.57829	.05997

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
SCAFFOLDING	Equal variances assumed	9.243	.003	1.856	126	.033	.066	.32788	.17666	-.02173	.67749
	Equal variances not assumed			2.350	105.784	.010	.021	.32788	.13950	.05131	.60445
SCHEMA	Equal variances assumed	2.573	.111	-.969	126	.167	.334	-.10809	.11151	-.32877	.11259
	Equal variances not assumed			-.910	54.541	.183	.367	-.10809	.11874	-.34610	.12992
ACTIVE_ENGAGEMENT	Equal variances assumed	.415	.520	-.280	126	.390	.780	-.03164	.11297	-.25520	.19192
	Equal variances not assumed			-.288	64.553	.387	.775	-.03164	.11002	-.25139	.18810

A two-sample t-test was performed to compare (a) scaffolding, (b) schema, and (c) active knowledge construction across gender. There was no significant difference for (a) scaffolding p=0,66), (b) schema (p=0.334) , and (c) active knowledge construction (Mp=0.780) across gender. Null hypothesis is accepted for H_{o1}.

Findings for Self-rating Reading in English Proficiency

This section presents data to answer the research question 1: Is there a significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across English proficiency?

H_{o2}: There is no significant relationship between (a) scaffolding, (b) schema, and (c) active knowledge construction across English proficiency

Table 6: T-Test for Self-rating Reading in English Proficiency

Group Statistics

	Q2SELFRATE	N	Mean	Std. Deviation	Std. Error Mean
SCAFFOLDING	AVERAGE	50	3.4600	.86342	.12211
	GOOD	78	3.3750	.92571	.10482
SCHEMA	AVERAGE	50	3.7967	.54220	.07668
	GOOD	78	3.9701	.56774	.06428
ACTIVE_ENGAGEMENT	AVERAGE	50	3.6417	.56450	.07983
	GOOD	78	3.8494	.55814	.06320

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
SCAFFOLDING	Equal variances assumed	.878	.350	.520	126	.302	.604	.08500	.16341	-.23838	.40838
	Equal variances not assumed			.528	109.858	.299	.598	.08500	.16092	-.23392	.40392
SCHEMA	Equal variances assumed	.033	.856	-1.716	126	.044	.089	-.17342	.10108	-.37345	.02661
	Equal variances not assumed			-1.733	108.101	.043	.086	-.17342	.10006	-.37175	.02492
ACTIVE_ENGAGEMENT	Equal variances assumed	.044	.834	-2.045	126	.021	.043	-.20769	.10156	-.40869	-.00670
	Equal variances not assumed			-2.040	103.732	.022	.044	-.20769	.10182	-.40961	-.00578

A two-sample t-test was performed to compare (a) scaffolding, (b) schema, and (c) active knowledge construction across self-rating reading in English proficiency. There was no significant difference for (a) scaffolding p=0,604), (b) schema (p=0.089) across self-rating reading in English proficiency. However, there is a significant relationship for (c) active knowledge construction (Mp=0.043) across self-rating reading in English proficiency. Null hypothesis is accepted for Ho_2.

Findings for Scaffolding

This section presents data to answer research question 3: How do learners' perception on Scaffolding in reading using ChatGPT? 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 7- 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.	3.48	1.18
CTQ2 ChatGPT's responses made me doubt their validity, leading me to seek further clarification or evidence.	3.75	1.03
CTQ3 I actively explore alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of the topic.	3.68	1.06
CTQ4I need clarification about the accuracy of ChatGPT's output, which often encourages me to evaluate the information and conduct additional research independently.	3.72	1.02

Table 7 presents the mean (M) and standard deviation (SD) values for learners' perceptions of critical thinking abilities in reading using ChatGPT. The highest mean was recorded for CTQ2, which stated that ChatGPT's responses made learners doubt their validity and seek further clarification or evidence (M = 3.75, SD = 1.03). This was followed closely by CTQ4, which indicated that learners sought clarification about the accuracy of ChatGPT's output and conducted additional research independently (M = 3.72, SD = 1.02). In contrast, the lowest mean was observed for CTQ1, which stated that learners needed clarification on the precision and reliability of information provided by ChatGPT to enhance their critical thinking skills (M = 3.48, SD = 1.18). Overall, the mean scores ranged from 3.48 to 3.75, while the standard deviations ranged from 1.02 to 1.18, indicating a relatively consistent spread of responses across the items. The findings showed that learners generally reported positive perceptions of critical thinking abilities when using ChatGPT for reading, particularly in relation to evaluating information, seeking clarification, and verifying evidence.

Table 8- 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.	3.63	0.99
AAQ2 ChatGPT brings innovative ideas that are ready to be shared with students.	3.44	1.13
AAQ3 Students can anticipate robust writing guidance from ChatGPT.	3.27	1.12
AAQ4 ChatGPT has improved my academic performance.	3.22	1.20

Table 8 presents the mean (M) and standard deviation (SD) values for learners' perceptions of Academic Achievements as a dimension of scaffolding in reading using ChatGPT. The highest mean score was recorded for AAQ1, which stated that learners actively explored alternative viewpoints or sources of information when using ChatGPT to ensure a comprehensive understanding of a topic (M = 3.63, SD = 0.99). This was followed by AAQ2, which indicated that ChatGPT brought innovative ideas that were ready to be shared with students (M = 3.44, SD = 1.13). Meanwhile, AAQ3, which referred to students anticipating robust writing guidance from ChatGPT, obtained a mean score of 3.27 (SD = 1.12). The lowest mean score was reported for AAQ4, which stated that ChatGPT had improved academic performance (M = 3.22, SD = 1.20). Overall, the mean scores ranged from 3.22 to 3.63, indicating relatively similar response patterns across the four items. The standard

deviation values ranged from 0.99 to 1.20, suggesting a moderate level of variability in respondents' perceptions. Across the items, respondents generally reported mean scores above the midpoint of the scale, with the highest ratings associated with exploring alternative perspectives and the lowest ratings associated with perceived improvements in academic performance. Overall, the findings suggest that respondents reported generally moderate perceptions regarding Academic Achievements when using ChatGPT for reading

Table 9- Mean (M) and Standard Deviation (SD) for Chatgpt Usage (CU)

ITEM	M	SD
CUQ1 ChatGPT is a state-of-the-art writing model that is favorably used today.	3.37	1.15
CUQ2 Students seek help from ChatGPT's assistance in composing essays and articles.	3.38	1.10
CUQ3 ChatGPT helps students in English language translation.	3.52	1.14
CUQ4 Employing ChatGPT significantly improves human productivity.	3.05	1.18
CUQ5 The advent of ChatGPT marks a groundbreaking transformation in Natural Language Processing capabilities.	3.20	1.10

Table 9 presents the mean (M) and standard deviation (SD) values for learners' perceptions of ChatGPT Usage as a dimension of scaffolding in reading using ChatGPT. Among the five items, the highest mean was recorded for CUQ3, which stated that ChatGPT helps students in English language translation (M = 3.52, SD = 1.14). This was followed by CUQ2, which indicated that students seek assistance from ChatGPT when composing essays and articles (M = 3.38, SD = 1.10), and CUQ1, which described ChatGPT as a state-of-the-art writing model that is favourably used today (M = 3.37, SD = 1.15). The item with the lowest mean was CUQ4, which stated that employing ChatGPT significantly improves human productivity (M = 3.05, SD = 1.18). Meanwhile, CUQ5, which referred to ChatGPT as a groundbreaking transformation in Natural Language Processing capabilities, obtained a mean score of 3.20 (SD = 1.10). Overall, the mean scores ranged from 3.05 to 3.52, while the standard deviations ranged from 1.10 to 1.18, indicating a relatively similar level of variability across the items. Overall, the findings suggest that respondents reported generally moderate perceptions regarding ChatGPT Usage when using ChatGPT for reading.

Table 10- 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.	3.08	1.20
SEQ2 ChatGPT increases confidence in my ability to conduct research/to search for materials	3.32	1.18
SEQ3 ChatGPT is easy to use and more engaging for me	3.42	1.22

Table 10 presents the mean (M) and standard deviation (SD) values for learners' perceptions of Student Engagement as a dimension of scaffolding in reading using ChatGPT. Among the three items, the highest mean score was recorded for SEQ3, which stated that ChatGPT was easy to use and more engaging for the respondent (M = 3.42, SD = 1.22). This was followed by SEQ2, which indicated that ChatGPT increased learners' confidence in their ability to conduct research or search for materials (M = 3.32, SD = 1.18). The lowest mean score was reported for SEQ1, which stated that ChatGPT was more interactive, human-like, and engaging for students (M = 3.08, SD = 1.20). Overall, the mean scores ranged from 3.08 to 3.42, reflecting a relatively narrow spread across the items. The standard deviation values ranged from 1.18 to 1.22, indicating a comparable level of variability in respondents' responses for all three statements. The response pattern showed that all items received mean scores above 3.00, with the highest ratings associated with ease of use and engagement, while the lowest ratings were related to perceptions of ChatGPT as an interactive and human-like tool. Overall, the findings suggest that respondents reported generally moderate perceptions regarding Student Engagement when using ChatGPT for reading.

Findings for Schema

This section presents data to answer research question 4: How do learners perceive Schema in reading? In the context of this study, this is measured by global reading strategies.

Table 11- mean (M) and Standard Deviation for Global Strategies(GS)

ITEM	M	SD
GSQ 1I think about whether the content of the on-line text fits my reading purpose	3.88	0.74
GSQ 2When reading on-line, I decide what to read thoroughly and what to ignore	3.89	0.85
GSQ3I use context clues to help me better understand what I am reading online	3.95	0.75
GSQ4I use typographical features like boldface and italics to identify key information.	3.70	1.00
GSQ5I try to guess what the content of the on-line text is about when I read.	4.09	0.70
GSQ6 scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.	3.91	0.89

Table 11 presents the mean (M) and standard deviation (SD) values for learners' perceptions of Schema in reading, as measured through Global Strategies. The highest mean score was recorded for GSQ5, which stated that respondents tried to guess what the content of the online text was about when reading (M = 4.09, SD = 0.70). This was followed by GSQ3, which indicated that respondents used context clues to better understand what they were reading online (M = 3.95, SD = 0.75), and GSQ6, which referred to scanning online texts to determine their relevance before reading thoroughly (M = 3.91, SD = 0.89). In contrast, the lowest mean score was reported for GSQ4, which stated that respondents used typographical features such as boldface and italics to identify key information (M = 3.70, SD = 1.00). The remaining items, GSQ1 and GSQ2, obtained mean scores of 3.88 (SD = 0.74) and 3.89 (SD = 0.85), respectively. Overall, the mean scores ranged from 3.70 to 4.09, while the standard deviation values ranged from 0.70 to 1.00, indicating relatively consistent responses across the items. The response pattern showed that all items received mean scores close to or above 3.70, reflecting consistently favourable ratings across the global reading strategy indicators. Overall, the findings suggest that respondents reported generally high perceptions regarding Global Strategies when using ChatGPT for reading.

Findings for Active Knowledge construction

This section presents data to answer research question 5: How do learners perceive Active Knowledge construction in reading? In the context of this study, this is measured by problem-solving and support reading strategies.

Table 12- 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	4.05	0.84
PSSQ2 I adjust my reading speed according to what I am reading on-line	4.00	0.85
PSSQ3 I stop from time to time and think about what I am reading on-line	3.77	0.92
PSSQ4 When on-line text becomes difficult, I re-read it to increase my understanding	4.23	0.82
PSSQ5 When I read on-line, I guess the meaning of unknown words or phrases	4.01	0.76
PSSQ6 I can distinguish between fact and opinion in on-line texts	3.8	0.83

Table 12 presents the mean (M) and standard deviation (SD) values for learners' perceptions of Active Knowledge Construction in reading, as measured through Problem-Solving Strategies. Among the six items, the highest mean score was recorded for PSSQ4, which stated that respondents re-read online texts when they became difficult in order to increase understanding (M = 4.23, SD = 0.82). This was followed by PSSQ1, which indicated that respondents tried to regain focus when they lost concentration while reading (M = 4.05, SD = 0.84), and PSSQ5, which referred to guessing the meaning of unknown words or phrases during online reading (M = 4.01, SD = 0.76). In contrast, the lowest mean score was reported for PSSQ3, which stated that respondents stopped from time to time to think about what they were reading online (M = 3.77, SD = 0.92). The remaining items, PSSQ2 and PSSQ6, obtained mean scores of 4.00 (SD = 0.85) and 3.80 (SD = 0.83), respectively. Overall, the mean scores ranged from 3.77 to 4.23, while the standard deviation values ranged from 0.76 to 0.92, indicating a relatively consistent level of response variability across the items. The response pattern showed that all items received mean scores above 3.70, reflecting consistently favourable ratings across the problem-solving

strategy indicators. Overall, the findings suggest that respondents reported generally high perceptions regarding Problem-Solving Strategies when using ChatGPT for reading.

Table 13- 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	3.16	1.05
SSQ2 I use reference materials (e.g. an on-line dictionary) to help me understand what read on-line.	3.55	1.05
SSQ3 I paraphrase (restate ideas in my own words) to better understand what I read on-line.	3.82	0.78
SSQ4 ask myself questions I like to have answered in the on-line text	3.55	0.97
SSQ5 When reading on-line, I translate from English into my native language	3.30	1.26
3.95SSQ6 When reading on-line, I think about information in both English and my mother tongue	3.95	1.03

Table 13 presents the mean (M) and standard deviation (SD) values for learners' perceptions of Active Knowledge Construction in reading, as measured through Support Strategies. The highest mean score was recorded for SSQ6, which stated that respondents thought about information in both English and their mother tongue while reading online (M = 3.95, SD = 1.03). This was followed by SSQ3, which indicated that respondents paraphrased ideas in their own words to better understand online texts (M = 3.82, SD = 0.78). Meanwhile, SSQ2 and SSQ4 obtained identical mean scores of 3.55, with standard deviations of 1.05 and 0.97, respectively. The lowest mean score was reported for SSQ1, which stated that respondents took notes while reading online to assist their understanding of the text (M = 3.16, SD = 1.05). SSQ5, which referred to translating from English into the respondents' native language while reading online, obtained a mean score of 3.30 (SD = 1.26). Overall, the mean scores ranged from 3.16 to 3.95, while the standard deviation values ranged from 0.78 to 1.26, indicating varying levels of response dispersion across the items. The response pattern showed that all items received mean scores above 3.00, with higher ratings associated with bilingual processing and paraphrasing strategies. Overall, the findings suggest that respondents reported generally moderate perceptions regarding Support Strategies when using ChatGPT for reading.

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), the coefficient is significant at the .05 level, and a 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.

Table 14- Correlation between Reading and ChatGPT using Constructivism

		Scaffolding	Schema	Active Knowledge Construction
Scaffolding	Pearson (Correlation	1	0.169	.276**
	Sig (2-tailed)		.056	.002
	N	128	128	128
Schema	Pearson (Correlation	.169	1	.712**
	Sig (2-tailed)	.056		<.001
	N	128	128	128
Active Knowledge Construction	Pearson (Correlation	.276**	.712**	1
	Sig (2-tailed)	.002	<.001	
	N	128	128	128

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

Findings for the Relationship between scaffolding and schema

This section presents data to answer research question 6: Is there a significant relationship between scaffolding and schema?

H_{03}: There is no significant relationship between scaffolding and schema

Table 14 shows there is no significant relationship between scaffolding and schema. Null hypothesis is accepted for H_{01}.

Findings for relationship between scaffolding and active knowledge construction

This section presents data to answer research question 7: Is there a significant relationship between scaffolding and active knowledge construction?

$H_{04.}$: There is no significant relationship between scaffolding and schema

Table 14 shows there is a significant relationship between scaffolding and active knowledge construction. There is a weak significant relationship between scaffolding and active knowledge construction (r=.276**) and (p=.0002).Null hypothesis is rejected for H_{04}

Findings for relationship between schema and active knowledge construction

This section presents data to answer research question 8: Is there a significant relationship between schema and active knowledge construction?

H_{05} There is no significant relationship between schema and active knowledge construction.

Table 14 shows there is a significant relationship between schema and active knowledge construction. There is a strong significant relationship between schema and active knowledge construction (r=.712**) and (p=<.001). Null. Hypothesis is rejected for $H_{05..}$

CONCLUSION

Summary of Findings and Discussions

This study examined reading with ChatGPT from a constructivist perspective by investigating learners' perceptions of scaffolding, schema, and active knowledge construction. It also explored whether these constructs differed according to gender and English proficiency, as well as the relationships among the three constructivist variables.

The findings indicated that gender did not significantly influence learners' perceptions of scaffolding, schema, or active knowledge construction when reading with ChatGPT. This suggests that male and female participants experienced ChatGPT-assisted reading in largely similar ways. In contrast, English proficiency was found to be associated with active knowledge construction, while no significant differences were observed for scaffolding or schema. These findings indicate that learners with different levels of English proficiency may engage differently in constructing knowledge during ChatGPT-assisted reading, even though their perceptions of support and schema-related reading processes remain comparable.

Regarding scaffolding, learners generally reported positive perceptions of ChatGPT's role in supporting reading-related activities. Participants indicated that ChatGPT encouraged them to verify information, seek clarification, explore alternative perspectives, and conduct additional research. Positive perceptions were also observed in relation to academic support, ChatGPT usage, and learner engagement. Collectively, these findings suggest that learners viewed ChatGPT as a source of guidance that supported their reading and learning processes.

For schema, learners reported frequent use of global reading strategies while engaging with online texts. Participants indicated that they considered reading purposes, utilized contextual clues, predicted text content, and evaluated the relevance of information before and during reading. These findings suggest that learners actively drew upon prior knowledge and strategic reading behaviors when interacting with texts in digital environments.

Regarding active knowledge construction, participants reported frequent use of both problem-solving and support reading strategies. Learners indicated that they adjusted reading strategies according to text difficulty, re-read challenging passages, inferred meanings of unfamiliar words, distinguished facts from opinions, and utilized various support mechanisms such as paraphrasing, note-taking, and reference materials. These findings suggest that learners were actively engaged in constructing meaning while reading with the support of digital resources.

The correlation analyses revealed mixed relationships among the three constructivist variables. No significant relationship was found between scaffolding and schema. However, a significant positive relationship was identified between scaffolding and active knowledge construction, indicating that greater perceptions of support were associated with stronger engagement in knowledge-construction activities. The strongest relationship emerged between schema and active knowledge construction, suggesting that learners who reported greater use of schema-related reading strategies were also more likely to engage in active processes of meaning construction.

Taken together, the findings suggest that reading with ChatGPT is characterized by learners' positive perceptions of instructional support, strategic engagement with texts, and active participation in meaning-making processes. At the same time, the differing relationships among the constructivist variables indicate that the interaction between support, prior knowledge, and knowledge construction may be more complex than commonly assumed within constructivist learning environments

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APPENDIX

SURVEY NO 32

READING STRATEGIES & CHAT GPT

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

SECTION	VARIABLE	CONSTRUCT	NO OF ITEMS	TOT
B	SCHEMA	Global	6	18
	ACTIVE ENGAGEMENT	Problem-Solving	6	
		Support	6	
C	SCAFFOLDING (CHAT GPT)	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
GSQ 1I think about whether the content of the on-line text fits my reading purpose					
GSQ 2When reading on-line, I decide what to read thoroughly and what to ignore					
GSQ3I use context clues to help me better understand what I am reading online					
GSQ4I use typographical features like boldface and italics to identify key information.					
GSQ5I try to guess what the content of the on-line text is about when I read.					
GSQ6 scan the on-line text to get a basic idea of whether it will serve my purposes before deciding to read it.					

(i) 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					

(ii) 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 read on-line.					
SSQ3 I paraphrase (restate ideas in my own words) to better understand what I read on-line.					
SSQ4 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.					
CTQ4I 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 Usgae (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					