Arab World English Journal
INTERNATIONAL PEER REVIEWED JOURNAL ISSN: 2229-9327

Arab World English Journal (AWEJ) Special Issue on Artificial Intelligence 2025 Pp.112-138
DOI: https://dx.doi.org/10.24093/awej/AI.7

Assessing EFL Undergraduates' Attitudes, Engagement, and Satisfaction Toward the Use of Artificial Intelligence in Enhancing Reading Comprehension

Shaden Alarifi
Department of English Language and Literature, College of Languages and Translation, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia
Corresponding Author: shaden1alarifi@gmail.com

Manal Mohammed AlSahli
Department of English Language and Literature, College of Languages and Translation, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia
Email: Alsahlimanal@outlook.sa

Talal Musaed Alghizzi
Department of English Language and Literature, College of Languages and Translation, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia
Email: Tmalghizzi@imamu.edu.sa

Received:11/11/2024 Accepted:04/04/2025 Published: 04/25/2025

Abstract
This study aims to assess undergraduates' attitudes, engagement, and satisfaction toward using Artificial Intelligence (AI) tools to enhance reading comprehension within the context of English as a Foreign Language (EFL) in Saudi Arabia. It measures their sub-dimensions; cognate, cognitive, and effectiveness attitude and behavioral, emotional, and cognitive engagement. A quantitative research design was employed using a five-point Likert scale-based questionnaire to address key questions on attitudes, engagement, satisfaction, and their correlations. A total of 170 English Language and Literature undergraduates from a Saudi university participated. Findings showed satisfaction ranked highest (M = 4.04), followed by attitude (M = 3.95), and engagement lowest (M = 3.90). Cognitive engagement (M = 4.14) was the strongest sub-dimension, closely linked to satisfaction, whereas emotional and behavioral engagement were weaker, indicating a need for more interactive AI tools. Students expressed willingness to recommend AI tools, though the impact of attitudes on academic success suggested room for enhancement. This study contributes to EFL research by holistically analyzing all the three dimensions and their sub-dimensions toward using AI-assisted reading comprehension. Unlike previous studies that examined these dimensions separately, it explores their interconnections. The main aim is to present the findings as recommendations for educators, AI developers, and EFL program administrators to better integrate AI tools in language education, as well as to contribute to a successful Al-assisted reading comprehension development, pedagogical insights, and practical implications for EFL teaching practices.

Keywords: Artificial intelligence, attitudes, behavioral engagement, cognition, cognate, effectiveness, emotional engagement, English as a foreign language, engagement, reading comprehension, satisfaction
How to cite: Alarifi, S., AlSahli, M. M., & Alghizzi, T. M. (2025). Assessing EFL Undergraduates' Attitudes, Engagement, and Satisfaction Toward the Use of Artificial Intelligence in Enhancing Reading Comprehension. *Arab World English Journal (AWEJ)* Special Issue on Artificial Intelligence: 112-138. https://dx.doi.org/10.24093/awej/AI.7

Introduction

In the field of research innovations and development in computers, machines, and other human-like intelligence, Artificial Intelligence (AI) is characterized by cognitive abilities, learning, and decision-making capabilities. Kathikeyan et al. (2022) defined AI as a set of capabilities of robots that carry out human intelligence; it includes generating visuals, speech recognition, translation, and decision-making. Russell and Norvig (2016) defined AI as a machine that can think and act both humanly and rationally. Recent research emphasized the importance of integrating personalized and adaptive AI tools to improve learning outcomes (Fisher et al., 2020). Thus, the integration of AI in EFL classrooms offers a potential solution to enhance language learning, providing undergraduates with more opportunities and improving their comprehension without relying solely on human interaction. The integration of AI tools in education can improve undergraduates' English language proficiency. Recent studies showed that undergraduates are now frequently using AI tools that help them learn English more effectively. For example, Kutsyk and Nykyporets (2024) found that AI tools have become a shared resource among university students for improving English proficiency.

Developing undergraduates' reading comprehension through AI tools is crucial for their academic and personal growth. As comprehension is a personal creation of meaning, reading comprehension may be considered one of the biggest problems that students of EFL face (Bani Issa, 2004). The amount of time spent engaging in reading activities is a strong indicator of the learner's motivation to read, which increases reading comprehension (Wigfield et al., 2008). Consequently, AI tools have the potential to improve the undergraduates' reading comprehension being taught and developed, offering a flexible and personalized learning experience. According to previous research, reading attitude is one of the most influential factors in reading success, a learner's reading attitude is shaped by their interest in reading a text, which is influenced by their experiences with reading. According to Chotitham and Wongwanich (2014), learners' comprehension and awareness of the significance of reading affect their emotional and attitudinal responses towards reading. Engagement is another critical factor that affects reading success. Wigfield et al. (2008) proposed an engagement model of reading development and defined reading engagement as "occurring when readers are motivated, strategic, socially interactive, and knowledgeable" (P.432). So, highly engaged readers are more likely to be motivated and strategic, whereas less engaged readers may lack motivation and the use of strategies to understand a text.

AI tools such as ChatGPT, Chatbots, QuillBot, Duolingo, Grammarly, and many others can help EFL learners (Amin, 2024). However, some AI tools are specifically designed to enhance their reading comprehension. As shown in Table (1), examples of AI tools; for instance, Rewordify simplifies text to match the learner's English level and helps with reading comprehension and vocabulary development (Athanasiadou et al., 2019). Another tool, ReadTheory, provides reading comprehension exercises tailored to the learner's proficiency (Tempest, 2018). Additionally, programs like Google Assistant and Alexia can read the text out loud, enabling undergraduates to detect errors and improve their reading through repetition. These tools offer features such as real-time feedback, assessments, and personalized learning which have the potential to enhance the undergraduates' comprehension and abilities and accelerate their language acquisition process (Rusmiyanto et al., 2023).

Table 1**.** *Examples of AI Tools*

AI App	Roles
ChatGPT	Text Comprehension, Vocabulary Building, etc.
QuillBot	Paraphrasing, Summarization, Translation, etc.
Duolingo	Language Learning, Vocabulary Practice, Grammar Skills, etc.
Grammarly	Grammar Checking, Clarity Enhancement, etc.
Rewordify	Simplifying Text, Reading Assistance, etc.
ReadTheory	Reading Comprehension, Tailored Practice, etc.
Google Assistant	Language Practice, Task Management, etc.
Alexia	Voice-Activated Assistance, Information Retrieval, etc.

Despite the popularity of integrating AI in education, the cognate, cognitive, and effectiveness sub-dimensions related to undergraduates' attitudes, engagement, and satisfaction with AI tools in enhancing reading comprehension have not yet been thoroughly explored, nor have the behavioral, emotional, and cognitive sub-dimensions related to engagement. This research aims to fill that gap by examining the use of AI tools to develop EFL undergraduates' reading comprehension. Cognate refers to how people or ideas are related due to shared experiences, characteristics, or values and how AI tools and human cognition share similarities in the learning process. Cognition refers to how we think, learn, and acquire knowledge, in the context of AI tools, it involves comprehension, memory, and critical thinking designed to support cognitive functions. On the other hand, effectiveness is the degree to which something successfully produces the desired outcome or achieves a goal; in this case, how well AI tools enhance reading comprehension. This is crucial because it enables the learner to interact with material that he or she can learn at their own pace and in a way that is most comfortable for them, therefore increasing the chances of getting the best outcomes from the learning process (Rusmiyanto et al., 2023). Behavioral engagement refers to the displays of effort, time, and persistence in attaining desired outcomes (Guthrie et al., 2012). This persistence as a part of engagement leads to more success and better achievement in a specific task. Emotional engagement is characterized by learners' affective responses during language-related activities. It reflects their feelings and attitudes toward the learning process and tasks. Emotionally engaged learners show positive emotions such as enjoyment, enthusiasm, and anticipation. Lastly, cognitive engagement is usually associated with high levels of processing and retention of information. It reflects how deeply learners are processing information and their ability to focus on tasks, and it can be observed through questioning, peer interactions, and the negotiation of meaning during discussions (Hiver et al., 2021).

Given the importance of these dimensions and their sub-dimensions, there is a clear need for studies that assess how attitudes, engagement, and satisfaction improve reading comprehension using AI tools. It is crucial to understand if the undergraduates are open to and positive about the use of AI for enhancing reading comprehension, as well as how actively they engage with AI tools in the learning process. This research highlights the significance of AI in improving EFL undergraduates' reading comprehension by ensuring that such technologies are effective in education and examining the correlation between dimensions and their sub-dimensions, aiming to help develop more effective AI tools for improving reading comprehension for EFL undergraduates, as well as, guiding educators and developers of AI platforms, to cooperate and enhance the quality of the learning experience.

Research Questions:

(1) What are the EFL undergraduates' attitudes regarding the effectiveness, cognate, and cognitive of AI tools in enhancing reading comprehension?
(2) To what extent are EFL undergraduates emotionally, behaviorally, and cognitively engaged when using AI tools?
(3) How satisfied are the EFL undergraduates with using AI tools to enhance their reading comprehension?
(4) Are there any correlations between undergraduates' attitudes, engagement, and satisfaction when using AI tools to enhance reading comprehension?

Literature Review

AI Tools for Improving Reading Comprehension

According to Santosa et al. (2018), reading comprehension is a complex intellectual process that includes two main abilities: mastery of the meaning of words and thinking about verbal concepts. Similarly, Snow (2002) defined reading comprehension as an evaluation process of information and claimed that a reader must decide whether the information read is coherent and suitable for reading. Another definition of reading comprehension by Rahim (2008) is a social constructivism process that builds new word meanings based on prior knowledge. Based on previous opinions, it can be concluded that the ability to read is an ability obtained by students during the learning process. So, students skilled in reading will carry out a production process that can produce new knowledge, experience, and attitude.

AI-driven tools have emerged as transformative assets in language learning and reading comprehension. Dewi et al. (2021) demonstrated that AI-based applications, websites, and virtual reality significantly improve English language proficiency. AI-powered text-to-speech (TTS) systems, such as NaturalReader and Google Text-to-Speech, have been found to enhance reading comprehension and word recall, particularly among EFL learners. These tools improve engagement by allowing students to listen while reading, aiding in pronunciation and cognitive processing (Eragamreddy, 2024). Beyond TTS, AI-driven platforms like Grammarly and Microsoft Immersive Reader provide immediate feedback on syntax, vocabulary, and grammar while highlighting key ideas or simplifying complex sentences for improved comprehension (Li et al., 2019). These features support learners in identifying errors, reinforcing language rules, and developing critical reading skills. Research by Sindermann et al. (2021) highlighted how AI

feedback mechanisms assist students in recognizing their strengths and weaknesses, guiding them toward personalized learning strategies. More advanced AI tools such as Lexica and ReadTheory employ adaptive algorithms to analyze text difficulty and offer customized recommendations to address learners' deficiencies (Pane et al., 2015). AI-driven reading platforms, such as Knewton and ALEKS, leverage machine learning to personalize learning experiences, dynamically adapting content based on students' proficiency levels. These platforms have demonstrated significant improvements in student engagement and reading comprehension (Liu, 2022).

According to Daweli and Mahyoub (2024), AI-based personalized reading assistants significantly improve EFL learners' engagement by providing tailored reading materials that align with their cognitive levels, ultimately fostering deeper comprehension and reading proficiency. The integration of AI in reading comprehension instruction has demonstrated significant positive outcomes supported by empirical research. Lestari et al. (2021) conducted a correlational study revealing a strong positive relationship (r = 0.67) between AI tool usage and reading comprehension improvement. Similarly, Haider and Abbas (2025) demonstrated that AI-driven reading interventions significantly improve EFL learners' comprehension by utilizing ICT-based strategies that provide immediate feedback and interactive exercises, ultimately enhancing engagement and reading proficiency.

Rusmiyanto et al. (2023) posited that AI tools are not merely complementary but fundamental to the advancement of educational outcomes. AI-enhanced reading platforms optimize learning by presenting tasks that align with learners' proficiency levels, thus improving their engagement and comprehension processes. Furthermore, research conducted by Wang et al. (2022) supports the claim that AI-driven platforms, such as ELSA Speak and Newsela, enable students to practice reading in real-world contexts. These tools leverage machine learning to assess progress and recommend reading materials suited to learners' evolving comprehension skills.

Attitudes Toward AI

Students' attitudes toward AI in education are generally positive, more so when AI is used appropriately. Dignum (2021) elaborated that students' beliefs are shaped by how AI engages them within the learning environment. Specifically, positive feedback indicates that AI tools are proven to improve learning outcomes and, at the same time, do not invade the student's privacy and freedom and are more likely to gain the support of students (Adıgüzel et al., 2023). This way of functioning AI is quite transparent, which brings more trust among the students that this technology is not going to interfere negatively with their learning process but rather facilitate it (Sur & Ünal, 2024).

With the increase of AI in education, other factors influence attitudes, such as the age of students, their experiences with technology, and cultural background play a critical role in the attitude toward the integration of AI in education (Bilad et al., 2023). Akhmetova et al. (2022) found that because of generational differences, millennial students who have been brought up with technology are more likely to accept AI tools and adopt their integration in the classroom easily. Additionally, students' prior experience with digital learning platforms and their cultural perspective on AI impact their willingness to engage with AI-powered educational tools (Alshriedeh & Mohammed, 2021).

Recent studies have confirmed these trends. Binmahfooz (2024) conducted a systematic review on the use of AI in education and found that students in the MENA region are more accepting of AI tools when they are culturally adapted to their learning needs. Similarly, Zaheer (2025) explored AI-driven e-learning models and revealed that students' attitudes improve when AI tools provide personalized learning pathways and instant feedback on progress. These findings suggest that when AI applications align with students' learning preferences and cultural expectations, they are more likely to be adopted and trusted.

Engagement with AI

The level of student engagement in an AI-fostered learning environment is multi-dimensional and includes behavioral, affective, and metacognitive components, which are integral to learning. AI tools lead to increased participation and learning by addressing the specific learning needs of the students, hence increasing the level of their involvement in the learning processes (Bilad et al., 2023). AI in learning positively impacts the learners, and studies show that the integration of AI in learning environments enhances the learners' participation and boosts their level of engagement (Chen et al., 2020). This is achieved by tools that offer content and feedback to the learner in a way that meets the learner's desire to learn, thus ensuring that learners are awake and engaged in the learning process. In particular, applications of AI that employ adaptive learning help to increase students' engagement as they allow the students to learn based on their needs (Dong & Hu, 2019). Deckker and Sumanasekara (2025) found that emotional AI technologies, which analyze student behavior and sentiment in real-time, enhance motivation and engagement by providing personalized encouragement.

Cường (2024) published a study about student engagement with AI-based language learning platforms. The study employed a qualitative, ethnographic method and used a questionnaire to obtain information about the subjective nature of people's experiences. He gathered feedback from students who interacted with the platforms. The study shows a strong preference for AI-based language learning platforms among the students' engagement levels. In addition, it shows how most of the participants found that AI tools were simple to use, gave clear instructions, and worked on different devices, found easy to handle and convenient. Participants also said they were excited to use these platforms, with some saying things like: "I'm interested," and "I can't wait to use these tools while studying." They were also happy with how AI tools could give a tailored learning experience that meets their needs.

Satisfaction with AI Integration in Learning

Evaluating student satisfaction in AI-based educational environments requires various methods like direct questioning, analysis of user interaction data, and evaluation of learning outcomes (Wang et al., 2022). These methodologies help determine the impact of AI tools on learner satisfaction, particularly in terms of personalization, adaptive learning, and AI-generated support (Daweli & Mahyoub, 2024). Studies indicate that students generally report high satisfaction levels when AI applications provide interactive, adaptive, and user-friendly experiences that align with their learning styles and goals (Mugableh, 2024). AI-powered tools enhance learning by personalizing instruction and offering real-time feedback, which boosts engagement and satisfaction (Avsheniuk et al., 2024).

Adıgüzel et al. (2023) completed a correlation study about the relationship between AI tools and learner satisfaction by using a quantitative research method. The participants were students from different educational backgrounds and levels, and a structured survey was used to measure how AI tools and learner satisfaction are correlated. They identified that when AI tools can address learning style and rate, satisfaction is enhanced because learning becomes more convenient.

Almufarreh (2024) conducted a study about the impact of well-being and cognitive absorption on student satisfaction with generative AI tools. He employed a quantitative research design, and 355 survey responses were collected from students using AI tools for education purposes. He measured the participants' emotional engagement and cognitive immersion to analyze their impact on overall satisfaction with the AI tools. The findings revealed that learners' emotional well-being while using a generative AI system, combined with the ease of engagement, plays a key role in their overall satisfaction. These factors work together to enhance the quality of the learning experience.

Zenouzagh et al. (2023) conducted a descriptive mixed-method study using both quantitative and qualitative data. The participants were divided into groups, with each research group consisting of 5 subgroups of four students. They found that students' satisfaction on online platforms was influenced by several factors such as learner dimension (learners' attitude, learner internet self-efficacy), teacher dimension (teacher presence, teacher digital competencies), curriculum dimension (curriculum flexibility, course quality, flexibility in interaction support system) and internet dimension (internet quality and support system) these factors significantly impacted satisfaction across both groups.

Research Gap

Although there are many related studies on the use of AI tools among EFL undergraduates, there are only a limited number of studies that provide an in-depth, explanatory analysis of measuring the EFL undergraduates' attitudes, engagement, and satisfaction with AI in the context of reading comprehension enhancement. Furthermore, the majority of the previous studies have chosen to measure a specific construct, such as attitudes, engagement, or satisfaction. So, there is a lack of focused research on measuring the three dimensions together and whether they are interconnected. In spite of the fact that previous studies have generally measured attitudes and engagement with AI tools, there is a need for a more detailed assessment. This includes measuring attitudes specifically toward the effectiveness, cognate, and cognition, as well as measuring engagement emotionally, behaviorally, and cognitively. Also, most of the previous studies, such as Almufarreh (2024), Adıgüzel et al. (2023), and Zenouzagh et al. (2023), did not focus on reading comprehension. Instead, they measured the learners' satisfaction with the use of AI tools in their learning process without specifying a particular skill.

Therefore, this study aims to fill these gaps by providing an explanatory analysis and uncovering the correlations between the dimensions, attitudes, engagement, and satisfaction within the framework of their sub-dimensions: cognate, cognitive, and effectiveness, as well as cognitive, emotional, and behavioral engagement, and overall satisfaction. In addition, as Liman Khan (2021) argues, 'electronic reading lessons could significantly improve the learners' reading comprehension skills and participation in class and out-of-class activities' (p. 205). This

underscores the importance of exploring how AI tools in reading comprehension learning might foster undergraduate engagement in the learning process as a whole, as well as examining their attitudes and satisfaction with AI tools and whether these dimensions correlate with their engagement. Also, Wang et al. (2022) established that the integration of AI in the learning process addresses undergraduates' needs, which is crucial in the development of reading comprehension in EFL contexts. This integration enhances undergraduates' English proficiency through personalized learning experiences. As a result, educators and developers continue to explore AI's potential, understanding and assessing the undergraduates' attitudes, engagement, and satisfaction and how they are correlated may contribute to developing personalized AI tools that adapt to their profiles, which consequently improves the outcomes in reading comprehension, and resonate with the undergraduates' needs.

Methodology

Research Design

This study applies a quantitative research design to assess EFL undergraduates' attitudes, engagement, and satisfaction toward using AI to enhance reading comprehension. It was conducted at a university in Saudi Arabia. The research adopts an explanatory approach to investigate these dimensions in depth. It is essential to consider not only the undergraduates' attitudes encompassing their sub-dimensions, cognate, cognitive, and effectiveness, but also their engagement, which includes cognitive, emotional, and behavioral, along with overall satisfaction with AI in enhancing reading comprehension. A correlational analysis will be employed to measure any significant relationships between dimensions.

Participants

The study consisted of 170 female undergraduates, aged between 18 and 24, who had been exposed to English from an early age. All participants were majoring in English Language and Literature at a university in Riyadh. They were in their third year and were currently enrolled in the fifth academic level of a four-year program. The program follows a study plan of 140 credit hours distributed across applied and theoretical linguistics, translation, and literature, along with skill-based courses in reading, writing, speaking, and listening. The initial population size was approximately 900 students, and a sample size of 270 was targeted based on a 5% margin of error. However, the actual sample size collected was 170 participants.

Instrument

This study employed a survey questionnaire based on a five-point Likert scale ranging from "strongly agree" to "strongly disagree.", a widely used instrument of data collection in research based on a quantitative research design. The questionnaire was reviewed by 3 PhD experts in the field to ensure the reliability, validity, and alignment with the study's objectives. The instrument's convergent validity was tested by correlating each statement with its scale/total degree of the scale; there were significant positive correlations between the statements and the total degree of the scale, ranging between ($r = 0.896$, $p < 0.001$) and ($r = 0.497$, $p < 0.001$). The Cronbach's alpha was great, ranging between ($\alpha = 0.96$) and ($\alpha = 0.89$). Thus, the questionnaire was valid and reliable for the study.

The questionnaire began with five demographic questions, followed by three main sections. The first section measured the undergraduates' attitudes toward AI tools in reading comprehension, consisting of three sub-dimensions: cognate (7 items), cognitive (7 items), and effectiveness (7 items). The second section explored the sub-dimensions of engagement with AI tools, focusing on emotional engagement (4 items), behavioral engagement (6 items), and cognitive engagement (4 items). The final section assessed the EFL undergraduates' overall satisfaction with using AI tools to enhance reading comprehension, containing eight items. A well-designed questionnaire allows for the measurement of both explicit attitudes and deeper attitudes, which provides a comprehensive of individuals' perceptions and feelings (Ajzen, 1991). The survey was administered via an online platform (Google Forms), with QR codes and URLs distributed throughout the college to facilitate easy access. The present research circulated the data collection instrument to more than 178 respondents within three weeks, and a total of 170 samples have been returned as fully completed survey forms, with an approximate response rate of 95%. This method ensured that students could participate in the study efficiently.

Data Collection Procedure

The data were collected by administering a questionnaire among female EFL undergraduates during the second, third, and fourth weeks of the academic year, and they were requested to complete it voluntarily and anonymously. The first part of the questionnaire consisted of 5 demographic questions, while the second part consisted of 52 questions designed to assess and measure undergraduates' attitudes, engagement, and satisfaction with using AI tools to enhance their reading comprehension. On average, it took students 5 to 10 minutes to complete the questionnaire, ensuring efficient and timely data collection.

Data Analysis

The data was collected through Google Forms and analyzed using SPSS version 25.0. The internal consistency of the scales was evaluated using Cronbach's alpha ($\alpha \geq 0.70$) as the standard to ensure reliability. Three Cronbach's alpha coefficients were calculated: attitude ($\alpha = 0.962$), engagement ($\alpha = 0890$), and satisfaction ($\alpha = 0.947$), all indicating high internal consistency. Significantly positive correlations between the items and the total scale score ranged between ($r = 0.896$, $p < 0.001$) and ($r = 0.497$, $p < 0.001$).

Percentages, rank, means, and standard deviations were used to describe the dimensions and sub-dimensions. In addition, the data normality was assessed using the One-Sample Kolmogorov-Smirnov Test; results indicate that the data were not normally distributed ($p < 0.05$), leading to the use of non-parametric tests, including Spearman or Pearson correlation and Mann-Whitney U test, and Kruskal-Wallis test, were applied to analyze the relationships between dimensions. Spearman correlation was specifically used to examine the relationships between undergraduates' attitudes, engagement, and satisfaction toward AI tools and their impact on reading comprehension development. A p-value of 0.05 or lower was considered statistically significant. Pearson's correlation was used to identify the correlation between each statement with its dimension.

Results

Attitude Toward Using AI-tools

Appendix (A) presents a descriptive analysis across three sub-dimensions: cognitive, cognate, and effectiveness related to the attitude of Saudi EFL undergraduates toward the use of AI tools in enhancing their reading comprehension. It includes a breakdown of responses to specific statements, along with a summary of statistics.

The analysis explored EFL undergraduates' attitudes toward the cognitive, cognate, and effectiveness dimensions of AI tools in enhancing reading comprehension, the total mean score for attitude was found (M = 3.95), with a standard deviation of (SD = 0.78), which indicates a high-level overall attitude toward the use of AI tools. The r-value indicates the strength and directions of these associations, and in Appendix (A), all correlations are significant at ($p \leq 0.01$). Breaking down the sub-dimensions further, the highest mean score was observed in the cognate dimension, 41.76% of respondents strongly agreed that AI tools reduce frustration with difficult texts, contributing to a total mean (M = 4.01) and standard deviation (SD = 0.90), indicating that undergraduates see value in how AI tools enhance their learning in ways that resonate with their natural thinking patterns, suggesting that technology is relatable and effective in improving reading comprehension. The highest-rated statement in this sub-dimension was "I feel accomplished using AI tools for reading because they help me get things done faster." with a mean of (M = 4.01), and (SD = 1.06), while "I feel more confident in my reading abilities when using AI tools." and "I feel more motivated to read with the help of AI tools." rank the lowest with the same mean score (M = 3.85). The highest correlation observed was in "AI tools make reading feel more enjoyable." with an r-value of (r = 0.827***), which indicates that undergraduates who enjoy reading with AI tools tend to have a very positive cognate attitude.

Followed by the cognitive sub-dimension, 46.47% of respondents agreed that they are familiar with and rely on AI tools for enhancing reading comprehension, with a total mean score of (M = 3.95) and (SD = 0.77), indicating a high level of cognitive abilities, such as critical thinking and problem-solving in reading tasks. The highest-rated statement, "AI helps me identify the main ideas and themes in readings." with (M = 4.25) and (SD = 0.88), meaning that there is an agreement on the usefulness of AI tools in helping students develop their reading. The lowest-rated cognitive statement was "AI tools are essential to my role as an EFL learner, and I cannot perform effectively without them." with (M = 3.61) and (SD = 1.2). The cognitive attitude revealed a very strong positive correlation between undergraduates' cognitive attitude and the use of AI tools with a rated statement "I trust the accuracy of AI in providing reading recommendations." with (r = 0.827***).

Finally, in terms of Effectiveness, 42.94% of respondents agreed that feedback from AI tools aids in improving reading comprehension skills, which results in an overall mean score of (M = 3.90) and (SD = 0.86); however, this still demonstrated a high level of usefulness and effect in improving reading comprehension. The highest-rated statement was "The feedback provided by AI tools helps me improve my reading comprehension." with (M = 4.01) and (SD = 0.93), while the lowest was "AI tools help me read faster without losing comprehension." with (M=3.80) and (SD = 1.05). The highest correlation is seen in the statement "I feel that my reading comprehension has significantly improved since using AI tools." with an r-value of (r = 0.827***), indicating that undergraduates who feel their reading comprehension skills have improved due to AI tools tend to

see that these tools as highly effective. Overall, the results across the three sub-dimensions, cognate, cognitive, and effectiveness, suggest a generally positive attitude among EFL undergraduates toward using AI tools in improving their reading comprehension skills.

Engagement Toward Using AI-tools

Appendix (B) presents a descriptive analysis of three sub-dimensions, cognitive, emotional, and behavioral, related to Saudi EFL undergraduates' engagement toward using AI tools to enhance their reading comprehension. It includes a breakdown of responses to specific statements, along with a summary of statistics.

In terms of engagement, the extent of EFL undergraduates' emotional, behavioral, and cognitive engagement when using AI tools, as described in Appendix (B), showed the total mean score of engagement (M = 3.90), with a standard deviation of (SD = 0.68), indicating a high level of overall engagement. The correlation coefficients further indicate the strength and direction of the relationship between the use of AI tools and engagement in reading comprehension among Saudi EFL undergraduates.

Among the engagement sub-dimensions, the highest mean score was observed in cognitive engagement, with (M = 4.14) and (SD = 0.92). The highest-rated statement is “I use AI tools to explore deeper meanings and interpretations of texts.” with (M = 4.07) and (SD = 0.96), meaning that undergraduates find a significant value in using AI tools to overcome difficulties in reading materials. The reported r-value ranges from (0.497) to (0.711), which indicates a moderate positive correlation between undergraduates’ engagement with AI tools and their reading practice. This signifies a strong cognitive involvement; undergraduates are deeply engaged when using AI tools in their learning.

Followed by emotional engagement, with a total mean score of (M = 3.98) and (SD = 0.49). The highest-rated statement was “I feel a sense of accomplishment when AI tools help me overcome reading difficulties.” with (M = 3.99) and (SD = 0.99), reflecting a high emotional connection to the learning process through AI tools, and a strong agreement that AI tools enhance their sense of achievement in reading. The r-value suggests a strong positive correlation (r = 0.753***), which reinforces the idea that undergraduates feel supported and accomplished with the use of AI tools.

The behavioral engagement scored the lowest among the three, with (M = 3.81) and (SD = 0.92). Despite being relatively lower than cognitive and emotional engagement, it suggests that EFL undergraduates are actively interacting with AI tools, completing tasks, and engaging in the learning process slightly less than their cognitive and emotional involvement. This can be seen in the highest-rated statement, “I use AI tools to review the reading materials from class.” with (M = 3.95) and (SD = 1.05). The r-value demonstrates positive correlations, with the highest correlation for “I regularly explore new features in AI tools to improve my reading.” at (r = 0.811***), which suggests that undergraduates who engage with new features are likely to dedicate more time and effort to reading. These findings suggest that EFL undergraduates experience high engagement across all three sub-dimensions cognitively, emotionally, and behaviorally when interacting with AI tools in their learning process. This highlights that AI tools have the ability to foster an intellectually engaging learning environment for students.

Satisfaction Toward Using AI-tools

To assess how satisfied EFL undergraduates are with AI tools to enhance their reading comprehension, Appendix (C) presents a descriptive analysis of Saudi EFL undergraduates' satisfaction with using AI tools in enhancing their reading comprehension. It includes a breakdown of responses to specific statements, along with a summary of statistics.

The total mean score for satisfaction was (M = 4.04), with a standard deviation of (SD = 0.87), indicating a high level of overall satisfaction shown in Figure (1). Among the survey statements, the highest mean score was observed for the statement "I would recommend AI-based reading tools to other students" with (M = 4.24) and (SD = 0.95), which reflects a very positive reception of AI tools. The lowest mean score, though still high, was for the item "AI tools have contributed to my overall academic success" with (M = 3.91) and (SD = 1.04). These results suggest that while students are generally very satisfied with AI tools, there may be room for further improvements in how they see these tools contributing to their overall academic success. Undergraduates' satisfaction reveals that they feel the most positive impact on their academic experience when using AI tools. The statement "I feel more prepared for reading assessments due to AI-based practice." shows the strongest correlation with an r-value of (r = 0.896).

The Correlations between Dimensions

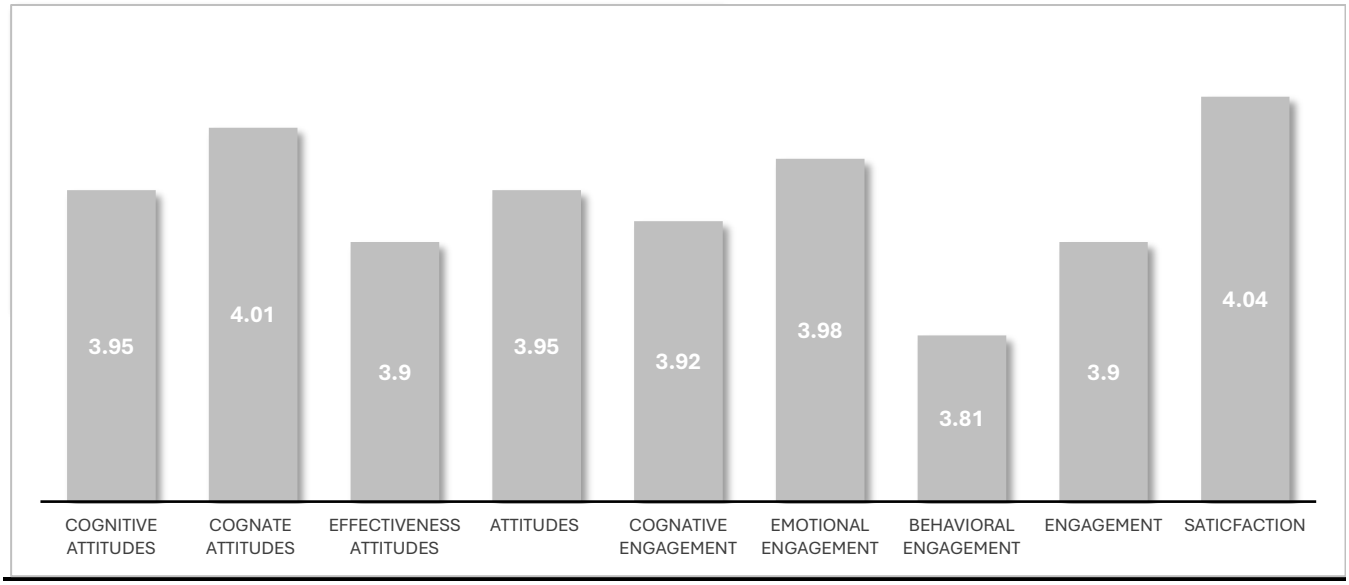


Figure 1. The Distribution of the Mean Score and the Level of the Dimensions

Table 2. *The Correlations between the Dimensions (n=170)*

Dimensions	Cognitive Attitudes	Cognate Attitudes	Effectiveness Attitudes	**Attitudes**	Cognitive Engagement	Emotional Engagement	Behavioral Engagement	**Engagement**	**Satisfaction**

Cognitive Attitudes	1								
Cognate Attitudes	.808***	1							
Effectiveness Attitudes	.768***	.826***	1						
Attitude	.915***	.947***	.931***	1					
Cognitive Engagement	.722***	.722***	.778***	.795***	1				
Emotional Engagement	.511***	.551***	.456***	.544***	.488***	1			
Behavioral Engagement	.765***	.801***	.814***	.853***	.828***	.555***	1		
Engagement	.783***	.809***	.816***	**.862*** **	.926***	.705***	.946***	1	
Overall Satisfaction	.730***	.789***	.773***	**.822*** **	.734***	.386***	.739***	**.746*** **	1
Key: n = Number of respondents; significance levels = * p≤0.05, **p≤0.01, ***p≤0.001									

As shown in Table two, which presents the correlations between the dimensions, the One-Sample Kolmogorov-Smirnov Test results indicated that none of the dimensions were normally distributed, with all p-values being less than 0.001 ($p < 0.001$). This suggests the use of non-parametric tests, such as Spearman correlation, to measure undergraduates' attitudes, engagement, and satisfaction when using AI tools to improve reading comprehension. The result showed that dimensions ranged between ($r = 0.86$, $p<0.001$) and ($r = 0.75$, $p <0.01$), so they have a high positive correlation. The undergraduates' cognitive attitudes and cognitive engagement had a strong positive correlation ($r = 0.722$, $p < 0.01$). Similarly, their enjoyment and motivation (cognate attitudes) were highly correlated with cognitive engagement ($r = 0.722$, $p < 0.01$) and behavioral engagement ($r = 0.801$, $p < 0.01$). Moreover, undergraduates who enjoyed using AI tools (cognate attitudes) ($r = 0.789$, $p < 0.01$), achieved positive learning outcomes and believed in the effectiveness of these tools (effectiveness attitudes) ($r = 0.773$, $p < 0.01$), showed strong positive correlations with their satisfaction. Another strong positive correlation was seen between undergraduates who were more engaged with AI tools cognitively, emotionally, or behaviorally and their satisfaction ($r = 0.746$, $p < 0.001$). Specifically, how the behavioral engagement correlated strongly with the satisfaction ($r = 0.739$, $p < 0.01$), highlights the importance of the interactive activity with AI tools.

The correlation between the attitude score and its sub-dimensions was very high, ranging from ($r = 0.915$ to $r = 0.947$), which shows a strong association among these dimensions. Thus, no moderate correlations were found within the attitude sub-dimensions, and they all displayed strong positive relationships. On the other hand, not all the sub-dimensions are strongly related, there are some moderate correlations between the engagement sub-dimensions. For instance, the correlation between emotional engagement and behavioral engagement was ($r = 0.555$, $p < 0.01$), showing a moderate correlation. Similarly, a moderate correlation was also seen between emotional and cognitive engagement.

Discussion

Attitude Toward Using AI-tools

This study looked into Saudi EFL undergraduates' attitudes toward using AI tools to enhance their reading comprehension abilities. It also determined the three sub-dimensions of attitude: cognitive, cognate, and effectiveness. To address these objectives, the Pearson correlation was calculated. The results of the Pearson correlation analysis revealed that each statement had a statistically significant correlation with the three attitudes. The positive association detected suggests that students are likely to have high reading comprehension in EFL classes when the students demonstrate cognitive, cognate, and effectiveness in their reading behavior. A positive attitude toward AI tools may significantly influence how undergraduates interact with various online resources. When students have a favorable attitude toward reading, they are more likely to engage effectively with AI tools and other online platforms to enhance their learning experience (Jeffery, 2017). A majority of participants in this study agreed that these technological tools are generally very good for language learning.

This positive attitude suggests that AI tools are effective in supporting undergraduates' language development. These findings are consistent with previous studies, which also emphasize the value of AI tools in educational contexts. For example, Samad and Ismail (2020), Kholis (2021), and Yingsoon (2021) all highlighted the effectiveness of AI-based applications in enhancing language acquisition (as cited in Cường, 2024). Anggraini (2022) and Madhavi et al. (2023) further noted that students who have a positive attitude toward AI tools tend to utilize them more effectively in their studies, leading to improved outcomes. Hanh (2024) supports this view, which indicates that a favorable attitude toward AI tools correlates with increased student engagement and language proficiency. This reinforcement of the positive attitude observed in the study indicates that AI tools are valuable learning aids that play a crucial role in educational practices.

Engagement Toward Using AI-tools

In the present study, it is important to consider all sub-dimensions, including cognitive, emotional, and behavioral engagement, using AI tools to enhance reading comprehension. The positive correlation between each statement had a statistically significant correlation with reading engagement, suggesting that students who are highly engaged in their reading using AI tools are likely higher achievers. This study's findings on correlations are consistent with existing research. Guthrie et al. (1999); Guthrie and Wigfield (2000) have demonstrated a positive link between engaged reading and academic [reading] achievement. Mete (2020) found a high, positive, and meaningful correlation between students' reading comprehension and reading engagement levels. Thus, students' high reading engagement's sub-dimensions are related to their high reading achievement when they read texts in English.

Interactive AI tools, such as Chatbots and such, have been shown to keep learners motivated and engaged by offering an exciting and relaxing environment for learning EFL (Ayedoun et al., 2019; Al-Abdullatif et al., 2023; Xie et al., 2021, as cited in Altwijri & Alghizzi, 2024). Table 1 highlights examples of AI tools that are commonly used in educational settings to enhance learner engagement. Learners reported feeling less bored and more energized while using conversational agents, allowing them to quickly and easily acquire new knowledge (Ebadi &

Amini, 2022; Ali et al., 2023; Yin et al., 2021). This aligns with previous researches that emphasize the significance of AI in providing learners with engaging and interactive experiences in educational contexts (Rusmiyanto et al., 2023; Hoang et al., 2021; Le & Vo, 2015).

The statements used to measure cognitive, emotional, and behavioral engagement in this study reflect similar sentiments. For example, participants reported that AI tools helped them develop new ways to approach reading challenges and apply strategies learned from AI tools. This shows high cognitive engagement, where students actively engage with the content by questioning and evaluating the information they read. In terms of emotional engagement, students found AI tools made reading more interesting and less overwhelming. The sense of accomplishment that students felt when overcoming reading difficulties using AI tools further demonstrates the emotional connection between undergraduates and technology. The behavioral engagement was reflected in the frequent use of AI tools to practice reading outside of class, explore new features, and track their reading progress. Students also set personal goals to improve their reading skills with the help of AI, highlighting its role in educational activities.

Satisfaction Toward Using AI-tools

Higher levels of attitudes and engagement are often correlated with greater satisfaction (Jeffery, 2017). If students are engaged across dimensions, they are more likely to report higher levels of satisfaction when using AI tools. This aligns with previous research, suggesting that engagement plays a critical role in shaping students' overall satisfaction with their learning tools (Almufarreh, 2024). By addressing the specific needs and preferences of students, educational institutions can significantly enhance satisfaction levels. This involves integrating effective online resources and support systems that promote engagement and accommodate diverse learning styles. In this context, AI tools that cater to students' learning preferences and provide tailored support are likely to improve satisfaction.

Almufarreh (2024) also identifies perceived utility as a significant predictor of satisfaction. Students who find AI tools useful for their academic tasks are more likely to report higher satisfaction, this is consistent with his research findings, which highlight a strong correlation between perceived functionality and student satisfaction, with a p-value of 0.000 and a beta coefficient of 0.260. This confirms that the practicality and usefulness of AI tools are essential factors driving student satisfaction. Moreover, higher levels of cognitive absorption when students are deeply involved in the learning process are associated with increased satisfaction. Students who experience greater engagement through AI tools tend to have more positive learning experiences, which, in turn, enhances their overall satisfaction with these tools (Almufarreh, 2024).

The Correlations Between Variables

This study emphasizes various sub-dimensions of attitude, engagement, and satisfaction as well as their correlations among undergraduates. The strong correlations between attitudes and satisfaction ($r = 0.822$, $p < 0.001$), between attitudes and engagement ($r = 0.862$, $p < 0.001$), and between engagement and satisfaction ($r = 0.746$, $p < 0.001$) highlight the overall effectiveness of AI tools in improving reading comprehension among the participants. Similarly, Pandita and Kiran (2023) and Almaiah et al. (2022) both found that students' positive attitudes with high engagement were key factors for their satisfaction with AI tools. Furthermore, the findings indicate that the strongest and most positive correlation in the study is between effectiveness attitudes and cognate attitudes, with a correlation coefficient of ($r = 0.826$, $p <$

0.001), suggesting that the enjoyment and motivation (cognate attitudes) toward AI tools are highly and significantly contribute with the effectiveness attitudes. As Alghizzi and Alshahrani (2020) claimed, without strong motivation, learners may be prevented from fully benefiting from the learning experience. This correlation is also consistent with prior research by Cường (2024).

However, the study findings found a moderate correlation between behavioral engagement and emotional engagement ($r = 0.555$, $p < 0.01$), indicating that undergraduates who are more actively using AI tools and participating in learning activities are also likely to feel interested. In the beginning, the undergraduates may feel emotionally engaged with AI tools, but their behavioral engagement over time may require more support. According to Mallik and Gangopadhyay (2023), students' engagement with AI tools can diminish if the tools fail to provide dynamic and adaptive content. So, the study emphasizes that emotional engagement can motivate students to use AI tools, but long-term behavioral engagement and consistent interaction require an effort from the tools to meet undergraduates' individual needs. To achieve both high levels of behavioral and emotional engagement, AI tools must offer personalized learning experiences that adapt to undergraduates' progress, and their proficiency level and help them to sustain their interest. Without these features, there is a risk of decreasing undergraduates' engagement, which could negatively affect both satisfaction and improving reading comprehension.

So, this correlation is not as strong as others, and it shows the existence of an overlap because of the effects of different factors to some extent. Unlike Pilotti et al. (2017), who pointed to emotional engagement as a more significant aspect than behavioral engagement, especially when students needed emotional support with difficult academic tasks. The differences in findings in this study and other studies suggest that sub-dimensions of engagement (cognitive, emotional, or behavioral) may vary in their impact on other dimensions depending on the educational course. So, using AI tools to improve reading comprehension might not show the same correlation between dimensions when using AI tools to improve another skill. As Cường (2024) proposed in his study, the attitude of a few participants was negative, and they found that AI tools for speaking skills were not very effective.

Finally, the study findings found that the correlation between emotional engagement and satisfaction has the weakest correlation. This indicates that emotional engagement played a complex role in integrating AI tools into L2 education, specifically reading comprehension, consistent with previous research findings (Garofalo & Farenga, 2024; Ulla et al., 2023). Furthermore, Ecclestone (2007) highlighted that some learners believed that the overuse of AI tools for language education threatens teacher-student relationships, which emphasize emotional well-being and engagement in the educational context.

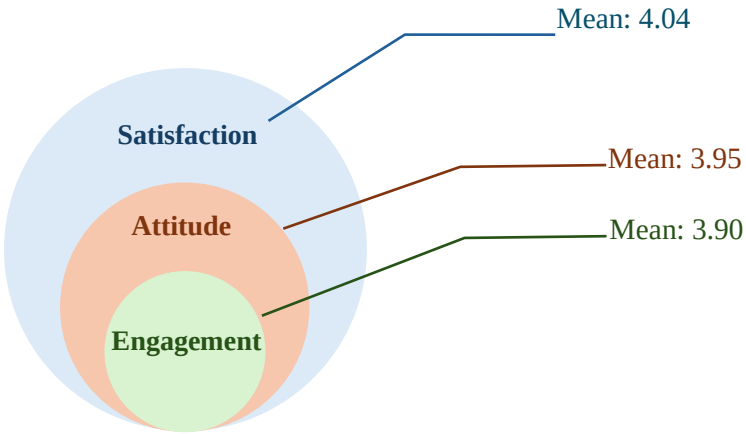


Figure 2. The Mean and Rank of Key Dimensions

Conclusion

Overall, as shown in *Figure 2*, which represents the mean and rank of key dimensions, overall satisfaction ranked the highest, with a mean score of 4.04. indicating a strong approval of AI tools in supporting their reading comprehension. Attitude followed closely with a total mean score of 3.95, while engagement ranked the lowest with a mean score of 3.90. These rankings demonstrate the relationship among dimensions, suggesting the extent of their active engagement, which is slightly lower but still notable as they are satisfied and hold positive attitudes toward AI tools. Hence, this could imply that while students were satisfied and found AI tools beneficial, their interaction may still have areas for growth. Thus, focusing on increasing engagement through developing new tools with more interactive features for reading comprehension is significant.

Additionally, the EFL undergraduates' willingness to recommend these tools reflects their satisfaction, though the attitude effect on academic success showed a potential need for enhancement. As EFL undergraduates showed a positive overall attitude, they appreciate AI's ability, especially in reducing reading frustrations, with enjoyment significantly enhancing their cognate attitude. They also engaged strongly and cognitively with AI tools to deepen their comprehension of texts. Whereas their emotional and behavioral engagement were weaker, they emphasized that these tools need support in creating and enhancing the behavioral and emotional environment.

The correlations between EFL undergraduates' attitudes, engagement, and satisfaction regarding using AI tools were generally positive, so the alignment of AI tools with the undergraduates' reading programs and curricula can enhance their reading comprehension. Since the highest attitude was toward the cognate dimension (M = 4.01), it is important to design Al tools relevant to undergraduates' needs and their learning experiences. Cognitive engagement (M = 4.14) was the highest sub-dimension in engagement, and it was strongly linked to satisfaction, so educators and AI developers should design tools that not only support emotional and behavioral engagement but also support cognitive tasks. On the other hand, scholars and educators could benefit from the results that focus on the importance not only of attitude, engagement, and satisfaction but also the correlation between them. Hence, scholars and educators are encouraged to improve their reading comprehension through AI tools in their future learning styles. Also, teachers might use AI tools in their teaching settings as part of an advanced educational process in teaching reading comprehension when AI tools have the characteristics of interaction, positive attitudes, and satisfaction.

However, the study was limited to one college in Saudi Arabia, which limits the generalizability of the findings to other educational contexts or cultural settings. Future research might have different results if they conduct the same research is conducted in different colleges in different countries because of the cultural differences or AI tools accessibility. Acosta-Vargas et al. (2024) claimed that accessibility is significant in ensuring that all learners with abilities or disabilities can access, engage, and effectively use AI tools online. So, primitive countries that cannot afford the AI tools for undergraduates might show lower engagement in the results.

The most relevant take-home message of the present study, which also illustrates one of its limitations, is that improving reading comprehension through AI tools is a complex process shaped by various dimensions and sub-dimensions and the correlations between them. Thus, immediate measures of the undergraduates' attitudes, engagements, and satisfaction may be unable to capture

the impact of these dimensions than long-term measurement towards learning through AI tools and future performance. For instance, the present study shows generally positive correlations between dimensions, as measured by immediate survey responses. However, a student who shows high satisfaction and engagement with the AI tool might lose interest over time if the tool does not adapt to their learning needs. In contrast, another student who might struggle with using the AI tool could gradually improve in both comprehension and overall academic performance if the tool supports their long-term growth. Islam et al. (2021) point out the importance of adaptability in which learners use a progressive decision-making approach to enhance the educational strategy. So, a more effective approach that assesses before and after an extended period of using AI tools or using pre- and post-tests might allow for a better understanding of its impact over time. For more future recommendations, since the research was conducted only on female participants, researchers could conduct a study on males and then compare the results between the two genders.

Funding Acknowledgments:
The authors extend their appreciation to the Deanship of Scientific Research at Imam Mohammad Ibn Saud Islamic University for funding and supporting this work through the Graduate Students Research Support Program.
Conflicts of Interest: The authors declare no conflict of interest.
Authenticity: This manuscript is an original work.
Artificial Intelligence Statement: During the preparation of this work, the authors used Grammarly to enhance grammar and readability. The authors carefully reviewed and edited the content as needed and take full responsibility for the content of the publication.

About the Authors:

Shaden Khalid Alarifi
A student pursuing a Master's in Applied Linguistics at the Department of English Language and Literature, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh, Saudi Arabia. She earned her BA in English Language and Literature from IMSIU.
ORCiD: https://orcid.org/0009-0004-9055-6260

Manal Mohammad Alsahli
A student pursuing a Master's in Applied Linguistics at the Department of English Language and Literature, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh, Saudi Arabia. She earned her BA in English Language and Literature from IMSIU.
ORCiD: https://orcid.org/0009-0002-6175-5717

Dr. Talal Musaed Alghizzi
An Associate Professor in Applied Linguistics at the Department of English Language and Literature, Imam Mohammad Ibn Saud Islamic University (IMSIU), Riyadh, Saudi Arabia.
He earned his BA in English Language and Literature and an MA in Translation from IMSIU, followed by a second MA and a PhD in Applied Linguistics from University College Cork, Ireland. Dr. Alghizzi's research interests include translation, language skills, and technology integration. He has published numerous articles in reputable journals such as Frontiers in

Psychology, Electronics, and Heliyon. ORCiD: https://orcid.org/0000-0002-1088-9216

References

Acosta-Vargas, P., Acosta-Vargas, G., Jadán-Guerrero, J., & Salvador-Acosta, B. (2024). Addressing Web Accessibility Challenges with Generative Artificial Intelligence Tools for Inclusive Education. *Proceedings of the 2024 International Conference on eDemocracy & eGovernment (ICEDEG)*. 1-7. https://doi.org/10.1109/ICEDEG61611.2024.10702085

Adıgüzel, T., Kaya, M. H., & Cansu, F. K. (2023). Revolutionizing Education with AI: Exploring the Transformative Potential of ChatGPT. *Contemporary Educational Technology, 15*(3), ep429. https://doi.org/10.30935/cedtech/13152

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Akhmetova, A., Imambayeva, G., & Csapó, B. (2022). A Study of Reading Attitude and Reading Achievement Among Young Learners in Middle School. *Heliyon*, *8*(7), e09946. https://doi.org/10.1016/j.heliyon.2022.e09946

Al-Abdullatif, A. M., Al-Dokhny, A. A., & Drwish, A. M. (2023). Implementing the Bashayer Chatbot in Saudi Higher Education: Measuring the Influence on Students' Motivation and Learning Strategies. *Frontiers in Psychology, 14*. https://doi.org/10.3389/fpsyg.2023.1129070

Alghizzi, T. M., & Alshahrani, T. M. (2020). EFL tutors' and learners' attitudes and practices in the writing centers at the College of Languages and Translation. *Advances in Language and Literary Studies, 11*(4), 62-75. https://eric.ed.gov/?id=EJ1280822

Ali, J. K. M., Shamsan, M. A. A., Hezam, T. A., & Mohammed, A. A. (2023). Impact of ChatGPT on Learning Motivation: Teachers and Students' Voices. *Journal of English Studies in Arabia Felix, 2*(1), 41-49. https://doi.org/10.56540/jesaf.v2i1.51

Allehyani, B., Almashy, A., Jamshed, M., Abdul, S. (2025). Measuring the Impact of Meta-AI on English Reading Comprehension Score Enhancement: A Study Within Social Media Application. *Theory and Practice in Language Studies. 15*(2). 615-623. https://doi.org/10.17507/tpls.1502.31

Almaiah, M. A., Alfaisal, R., Salloum, S. A., Hajjej, F., Thabit, S., El-Qirem, F. A., Lutfi, A., Alrawad, M., Al Mulhem, A., & Alkhdour, T. (2022). Examining the Impact of Artificial Intelligence and Social and Computer Anxiety in E-Learning Settings: Students' Perceptions at the University Level. *Electronics, 11*(3662). https://doi.org/10.3390/electronics11223662

Almufarreh, A. (2024). Determinants of Students' Satisfaction with AI Tools in Education: A PLS-SEM-ANN Approach. *Sustainability*, *16*(13), 5354. https://doi.org/10.3390/su16135354

Alshriedeh, A., & Mohammed, R. (2021). The Effect of an Artificial Intelligence Program on EFL Students on Reading Skill. *Ilkogretim Online*, *20*(5), 1727-1731. https://ilkogretim-online.org/index.php/pub/article/view/5274/5107

AlTwijri, L., & Alghizzi, T. M. (2024). Investigating the Integration of Artificial Intelligence in English as Foreign Language Classes for Enhancing Learners' Affective Factors: A Systematic Review. *Heliyon. 10*(10), e31053. https://doi.org/10.1016/j.heliyon.2024.e31053

Amin, E. A. R. (2024). EFL Students' Perception of Using AI Text-to-Speech Apps in Learning Pronunciation. *Online Submission*, *21*(3), 887-903. http://dx.doi.org/10.2139/ssrn.4746800

Anggraini, A. (2022). Improving Students' Pronunciation Skill Using ELSA Speak Application. *Journey: Journal of English Language and Pedagogy*, *5*(1), 135-141. https://doi.org/10.33503/journey.v5i1.1840

Athanasiadou, P., Andreou, G., & Gana, E. (2019). ICT and Specific Learning Disabilities: A Proposition for the Use of the Software Rewordify in the Foreign Language Learning by Students with

Reading Comprehension Difficulties. *International Conference in Open & Distance Learning*, *10*(3A), 85-93. https://doi.org/10.12681/icodl.2298

Ayedoun, E., Hayashi, Y., & Seta, K. (2019). Adding Communicative and Affective Strategies to an Embodied Conversational Agent to Enhance Second Language Learners' Willingness to Communicate. *International Journal of Artificial Intelligence in Education, 29*(1), 29-57. https://doi.org/10.1007/s40593-018-0171-6

Avsheniuk, N., Lutsenko, O., Svyrydiuk, T., & Seminikhyna, N. (2024). Empowering Language Learners' Critical Thinking: Evaluating ChatGPT's Role in English Course Implementation. *Arab World English Journal (AWEJ), Special Issue on ChatGPT,* 210-224. https://dx.doi.org/10.24093/awej/ChatGPT.14

Bani Issa, M. A. (2004). The Relationship Between Background Knowledge and Reading Comprehension of Jordanian Upper Basic Stage Students. *Amman Arab University for Graduate Studies*, 1-70. http://thesis.mandumah.com/Record/176297/Details#tabnav

Bilad, M. R., Yaqin, L. N., & Zubaidah, S. (2023). Recent Progress in the Use of Artificial Intelligence Tools in Education. *Journal of Research and Education Studies: e-Saintika, 7*(3), 279-314. https://doi.org/10.36312/esaintika.v7i3.1377

Binmahfooz, S. S. (2024). A Systematic Literature Review of Artificial Intelligence in Special Education. *Educational and Psychological Studies. Journal of the College of Education, Zagazig University, 39*(137), 417-464. https://doi.org/10.21608/SEC.2024.382467

Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access, 8*, 75264-75278. https://doi.org/10.1109/ACCESS.2020.2988510

Chotitham, S., & Wongwanich, S. (2014). The Reading Attitude Measurement for Enhancing Elementary School Students' Achievement. *Procedia - Social and Behavioral Sciences, 116*, 3213-3217. https://doi.org/10.1016/j.sbspro.2014.01.737

Cường, T. H. (2024). Using AI for Students' Attitudes to Improve their Speaking Skills at a University. *International Journal of Advanced Multidisciplinary Research and Studies, 4*(4), 557-562. https://doi.org/10.62225/2583049X.2024.4.4.3070

Daweli, T. W., & Mahyoub, R. A. M. (2024). Exploring EFL Learners' Perspectives on Using AI Tools and Their Impacts in Reading Instruction: An Exploratory Study. *Arab World English Journal (AWEJ) Special Issue on CALL* (10). 160-171. https://dx.doi.org/10.24093/awej/call10.11

Deckker, D., & Sumanasekara, S. (2025). Emotional AI for Student Motivation and Retention: A Systematic Review and Future Directions. *International Journal of Global Economic Light, 11*(3). https://doi.org/10.36713/epra20564

Dewi, H. K., Rahim, N. A., Putri, R. E., Wardani, T. I., & Pandin, M. G. R. (2021). The Use of AI (Artificial Intelligence) In English Learning Among University Students: Case Study in English Department, Universitas Airlangga. https://doi.org/10.31219/osf.io/sdntr

Dignum, V. (2021). The Role and Challenges of Education for Responsible AI. *London Review of Education*, *19*(1), 1-11. https://doi.org/10.14324/LRE.19.1.01

Dong, X., & Hu, J. (2019). An Exploration of Impact Factors Influencing Students' Reading Literacy in Singapore with Machine Learning Approaches. *International Journal of English Linguistics*, *9*(5), 52-65. https://doi.org/10.5539/ijel.v9n5p52

Ebadi, S., & Amini, A. (2024). Examining the Roles of Social Presence and Human-Likeness on Iranian EFL Learners' Motivation Using Artificial Intelligence Technology: A Case of CSIEC Chatbot. *Interactive Learning Environments*, *32*(2), 655-673. https://doi.org/10.1080/10494820.2022.2096638

Ecclestone, K. (2007). Resisting Images of the 'Diminished Self': The Implications of Emotional Well-Being and Emotional Engagement in Education Policy. *Journal of Education Policy*, *22*(4), 455-470. https://doi.org/10.1080/02680930701390610

Eragamreddy, N. (2024). Interactive AI-Driven Storytelling for Language Development. *International Journal of Social Science Humanity & Management Research*.*4*(2). https://doi.org/10.58806/ijsshmr.2025.v4i2n08

Fisher, D., Frey, N., & Hattie, J. (2020). The Distance Learning Playbook, Grades K-12: Teaching for Engagement and Impact in Any Setting. *Corwin.* https://uk.sagepub.com/en-gb/eur/node/1575935/download-pdf

Garofalo, S. G., & S. J. Farenga. 2024. Science Teacher Perceptions of the State of Knowledge and Education at the Advent of Generative Artificial Intelligence Popularity. *Science & Education*, 1–20. https://doi.org/10.1007/s11191-024-00534-y

Guthrie, J. T., Wigfield, A., & You, W. (2012). Instructional Contexts for Engagement and Achievement in Reading. *Handbook of Research on Student Engagement*, 601-634. https://doi.org/10.1007/978-1-4614-2018-7_29

Guthrie, J. T., Wig field, A., Metsala, J. L., & Cox, K. E. (1999). Motivational and Cognitive Predictors of Text Comprehension and Reading Amount. *Scientific Studies of Reading*, *3*(3), 231-256. https://doi.org/10.1207/s1532799xssr0303_3

Guthrie, J. T., & Wig field, A. (2000). Engagement and Motivation in Reading. *The Handbook of Reading Research*, *3*, 403-424. https://doi.org/10.4324/9781315200613

Haider, U., & Abbas, A. (2025). Pandemic-Driven Shifts in STEAM Education: Using AI and ICT to Enhance Reading Comprehension for ELL Students. *ResearchGate.* https://doi.org/10.13140/RG.2.2.20327.36003

Hanh, N. T. T. (2024) Intervention Development for Self-Regulated Writing among English Learners: A Single-Case Design Study. *International Journal of Advanced Multidisciplinary Research and Studies*. *4*(3), 1399-1410. https://doi.org/10.62225/2583049X.2024.4.3.2953

Hiver, P., Al-Hoorie, A. H., Vitta, J. P., & Wu, J. (2024). Engagement in Language Learning: A Systematic Review of 20 Years of Research Methods and Definitions. *Language Teaching Research, 28*(1), 201-230. https://doi.org/10.1177/13621688211001289

Hoang, Q., Pham, T., Dang, Q., & Nguyen, T. (2021). Factors Influencing Vietnamese Teenagers' Intention to Use Mobile Devices for English Language Learning. *Advances in Social Science, Education and Humanities Research, 621,* 230-245. https://doi.org/10.2991/assehr.k.211224.023

Islam, M. Z., Ali, R., Haider, A., Islam, M. Z., & Kim, H. S. (2021). Pakes: A Reinforcement Learning-Based Personalized Adaptability Knowledge Extraction Strategy for Adaptive Learning Systems. *IEEE Access 9*, 155123-155137. https://ieeexplore.ieee.org/abstract/document/9617651

Jeffery, M. M. (2017). The Relation Between Student Engagement and Reading Attitude in an Online High School Learning Environment. *Aurora University*. http://pqdtopen.proquest.com/#viewpdf?dispub=10598792

Kathikeyan, T., Revathi, S., Supreeth, B. R., Sasidevi, J., Ahmed, M., & Das, S. (2022). Artificial Intelligence and Mixed Reality Technology for Interactive Display of Images in Smart Area. *2022 5th International Conference on Contemporary Computing and Informatics*, 2049- 2053. https://api.semanticscholar.org/CorpusID:257668242

Kholis A. (2021). Elsa Speak App: Automatic Speech Recognition (ASR) for Supplementing English Pronunciation Skills. *Pedagogy: Journal of English Language Teaching. 8*(1), 1-14. https://doi.org/10.32332/joelt.v9i1.2723

Kutsyk, B., & Nykyporets, S. (2024). The Impact of Artificial Intelligence on Language Learning. https://www.researchgate.net/publication/381520922_the_impact_of_artificial_intelligence_on_language_learning

Le, X. M, & Vo, K. H. (2015). Factors Affecting Secondary-School English Teachers Adoption of Technologies in Southwest Vietnam. *Language Education in Asia, 5*(2), 198-215. https://api.semanticscholar.org/CorpusID:155442818

Lestari, S., Usadiati, W., & Misrita, M. (2021). The Correlation between Students' Artificial Intelligence and their English Reading Skills Achievement. *Language: Journal of Indonesian Language and Literature Education, 3*(2), 103-111. https://doi.org/10.26499/bahasa.v3i2.110

Liu, T. C. (2022). A Case Study of the Adaptive Learning Platform in a Taiwanese Elementary School: Precision Education from Teachers' Perspectives. *Education and Information Technologies, Springer,27*. https://doi.org/10.1007/s10639-021-10851-2

Li, X., Feng, J., Meng, Y., Han, Q., Wu, F., & Li, J. (2019). A Unified MRC Framework for Named Entity Recognition. *Proceedings of the 58th Annual Meeting of the Association for Computational Linguistics*, 5849-5859. https://doi.org/10.48550/arXiv.1910.11476

Liman Kaban, A. (2021). EFL Students' Personalized Reading Experiences and its Influence on Engagement and Online Presences. *Shanlax International Journal of Education, 9*(4), 196-209. https://doi.org/10.34293/education.v9i4.4113

Madhavi, E., Sivapurapu, L., Koppula, V., Rani, P. E., & Sreehari, V. (2023). Developing Learners' English-Speaking Skills Using ICT and AI tools. *Journal of Advanced Research in Applied Sciences and Engineering Technology, 32*(2), 142-153. https://doi.org/10.37934/araset.32.2.142153

Mallik, S., & Gangopadhyay, A. (2023). Proactive and Reactive Engagement of Artificial Intelligence Methods for Education: A Review. *Frontiers in Artificial Intelligence*, 6, Article 1151391. https://doi.org/10.3389/frai.2023.1151391

Mete, G. (2020). The Impact of the Reading Engagement Model on the 6th Graders' Reading Comprehension Achievement. *African Educational Research Journal*. *8*(3), 499-510. https://files.eric.ed.gov/fulltext/EJ1263369.pdf

Mugableh, A. I. (2024). The Impact of ChatGPT on the Development of Vocabulary Knowledge of Saudi EFL Students. *Arab World English Journal (AWEJ) Special Issue on ChatGPT,* 265- 281. https://dx.doi.org/10.24093/awej/ChatGPT.18

Pane, J. F., Steiner, E. D., Baird, M. D., & Hamilton, L. S. (2015). Continued Progress: Promising Evidence on Personalized Learning. *RAND Corporation*. http://dx.doi.org/10.7249/RR1365

Pandita, A. & Kiran, R. (2023). The Technology Interface and Student Engagement Are Significant Stimuli in Sustainable Student Satisfaction. *Sustainability, 15*, 7923. https://doi.org/10.3390/su15107923

Pilotti, M., Anderson, S., Hardy, P., Murphy, P., & Vincent, P. (2017). Factors Related to Cognitive, Emotional, and Behavioral Engagement in the Online Asynchronous Classroom. *International Journal of Teaching and Learning in Higher Education, 29*(1), 145-153. https://eric.ed.gov/?id=EJ1135992

Rahim, F. (2008). Pengajaran Membaca di Sekolah Dasar. *Jakarta: Bumi Aksara.* *https://pustaka.kemdikbud.go.id/libdikbud/index.php?p=show_detail&id=46396*

Rahman, M. H. A., & Nor, H. (2024). The Unveiling of the Role of Artificial Intelligence on Reading Processes. *PRIMACY Journal of English Education and Literacy*, *3*(1), 18-27. https://doi.org/10.33592/primacy.v3i1.4877

Rusmiyanto, R., Huriati, N., Fitriani, N., Tyas, N. K., Rofi'i, A., & Sari, M. N. (2023). The Role of Artificial Intelligence (AI) in Developing English Language Learner's Communication Skills. *Journal on Education*, *6*(1), 750-757. https://doi.org/10.31004/joe.v6i1.2990

Russell, S.J., & Norvig, P. (2016). Artificial Intelligence: A Modern Approach. *Pearson Education Limited.* https://people.engr.tamu.edu/guni/csce421/files/AI_Russell_Norvig.pdf

Samad, I., & Ismail, I. (2020). ELSA Speak Application as a Supporting Media in Enhancing Students' Pronunciation Skill. *Majesty: Language Education and Distance Learning*, *2*(2), 1-7. https://doi.org/10.33487/majesty.v2i2.510

Santosa, A.I., Rafli, Z., & Lustyantie, N. (2018). The Influence of Parenting Style and Language Attitude Toward the Reading Comprehension Achievement. *Journal of Indonesian Language Education, 18*(1), 69-80. https://doi.org/10.17509/bs_jpbsp.v18i1.12147

Sindermann, C., Sha, P., Zhou, M., Wernicke, J., Schmitt, H. S., Li, M., Sariyska, R., Stavrou, M., Becker, B., & Montag, C. (2021). Assessing the Attitude Towards Artificial Intelligence: Introduction of a Short Measure in German, Chinese, and English Language. *KI-Künstliche Intelligenz, 35*(1), 109-118. https://doi.org/10.1007/s13218-020-00689-0

Sur, E., & Ünal, E. (2024). The Mediating Role of Reading Attitude in the Relationship between Elementary School Students' Reading Engagement and Reading Comprehension Skills. *Journal of Theoretical Educational Science*, *17*(2), 307-323. https://doi.org/10.30831/akukeg.1276067

Snow, C. (2002). Reading for Understanding: Toward a Research and Development Program in Reading Comprehension. *RAND Corporation.* https://www.rand.org/pubs/monograph_reports/MR1465.html#citation

Tempest, C. (2018). Implementation of ReadTheory in a University EFL Context. *OnCue Journal*, *11*(1), 81-91. http://jaltcue.org/files/OnCUE/OCJ11.1/OCJ11.1_pp81-91_Tempest.pdf

Thaqi, E., Mantawy, M., & Kasneci, E. (2024). SARA: Smart AI Reading Assistant for Reading Comprehension. *Journal of Artificial Intelligence in Education*, *39*(2), 112-130. https://doi.org/10.48550/arXiv.2404.06906

Ulla, M. B., W. F. Perales, & S. O. Busbus. (2023). 'To Generate or Stop Generating Response': Exploring EFL Teachers' Perspectives on ChatGPT in English Language Teaching in Thailand. *Learning: Research and Practice, 9*(2), 168–182. https://doi.org/10.1080/23735082.2023.2257252

Wang, X. W., Zhu, Y. J., & Zhang, Y. C. (2022). An Empirical Study of College Students' Reading Engagement on Academic Achievement. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.1025754

Wigfield, A., Guthrie, J. T., Perencevich, K. C., Taboada, A., Klauda, S. L., McRae, A., & Barbosa, P. (2008). Role of Reading Engagement in Mediating Effects of Reading Comprehension Instruction on Reading Outcomes. *Psychology in the Schools*, *45*(5), 432-445. https://doi.org/10.1002/pits.20307

Xie, T., Liu, R., Chen, Y., & Liu, G. (2021). MOCA: A Motivational Online Conversational Agent for Improving Student Engagement in Collaborative Learning. *IEEE Transactions on Learning Technologies, 14*(5), 653-664. https://ieeexplore.ieee.org/document/9625781

Yin, J., Goh, T. T., Yang, B., & Xiaobin, Y. (2021). Conversation Technology with Micro-Learning: The Impact of Chatbot-Based Learning on Students' Learning Motivation and Performance. *Journal of Educational Computing Research, 59*(1), 154-177. https://doi.org/10.1177/0735633120952067

Yingsoon, G. (2021). Using AI Technology to Support Speaking Skill Development for the Teaching of Chinese as a Foreign Language. *Multidisciplinary Functions of Blockchain Technology in AI and IoT Applications*. 209-227. https://doi.org/10.4018/978-1-7998-5876-8.ch010

Zaheer, M. A. (2025). Developing an Integrated Model for Remote Teaching Amelioration with AI Awareness. *Quality Assurance in Education, 33* (2), 283-304. https://doi.org/10.1108/QAE-04-2024-0060

Zenouzagh, Z. M., Admiraal, W., & Saab, N. (2023). Learner Autonomy, Learner Engagement, and Learner Satisfaction in Text-Based and Multimodal Computer-Mediated Writing Environments. *Education and Information Technologies, 28*(11), 14283-14323. https://doi.org/10.1007/s10639-023-11615-w

Appendices

Appendix A. *Attitudes of Saudi EFL Undergraduates Toward AI Tools in Enhancing Reading Comprehension (n=170)*

Dimensions	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	M	SD	R	r
Cognitive Attitudes	I am familiar with AI tools or applications designed to enhance reading comprehension.	36.47%	39.41%	17.09%	7.06%	0.00%	4.05	0.91	3	0.715***
	AI tools are essential to my role as an EFL learner, and I cannot perform effectively without them.	28.24%	30.59%	21.18%	14.12%	5.88%	3.61	1.2	7	0.735***
	I find AI-based reading tools easy to navigate and use.	40.00%	30.59%	21.18%	8.24%	0.00%	4.02	0.97	4	0.805***
	AI enhances my ability to comprehend complex text.	40.59%	37.65%	12.94%	7.65%	1.18%	4.09	0.97	2	0.755***
	AI tools help me remember the information I read more effectively.	39.41%	28.24%	19.41%	11.18%	1.76%	3.92	1.09	5	0.761***
	I trust the accuracy of AI in providing reading recommendations.	30.00%	27.65%	25.88%	14.12%	2.35%	3.69	1.12	6	0.827***
	AI helps me identify the main ideas and themes in readings.	46.47%	37.65%	11.18%	3.53%	1.18%	4.25	0.88	1	0.813***
Total Cognitive Attitude							3.95	0.77	2	
Cognate Attitudes	I enjoy using AI tools to practice reading.	37.06%	40.00%	14.12%	6.47%	2.35%	4.03	0.99	5	0.715***
	I feel more motivated to read with the help of AI tools.	35.29%	32.35%	19.41%	8.24%	4.71%	3.85	1.13	6	0.735***
	AI tools reduce the frustration I feel when reading difficult texts.	41.76%	39.41%	14.12%	2.35%	2.35%	4.16	0.92	1	0.805***
	I feel more confident in my reading abilities when using AI tools.	34.12%	35.29%	17.67%	7.06%	5.88%	3.85	1.15	7	0.755***
	I am excited to explore new AI tools that will help improve my reading comprehension.	41.18%	38.24%	13.53%	3.53%	3.53%	4.1	1.0	2	0.761***
	AI tools make reading feel more enjoyable.	38.82%	35.29%	14.12%	7.06%	4.71%	3.96	1.11	4	0.827***
	I feel accomplished using AI tools for reading because they help me get things done faster.	43.53%	37.06%	8.82%	7.06%	3.53%	4.1	1.06	3	0.813***
Total Cognate Attitude							4.01	0.90	1	
Effectiveness Attitudes	I believe AI can identify my reading weaknesses accurately.	31.18%	34.12%	22.35%	8.82%	3.53%	3.81	1.08	6	0.715***
	The feedback provided by AI tools helps me improve my reading comprehension.	33.53%	42.94%	15.88%	6.47%	1.18%	4.01	0.93	1	0.735***
	I achieve better reading comprehension scores with the help of AI.	39.41%	29.41%	23.53%	5.29%	2.35%	3.98	1.03	2	0.805***
	AI tools help me read faster without losing comprehension.	29.41%	35.88%	22.35%	10.00%	2.35%	3.8	1.05	7	0.755***
	AI provides personalized learning experiences that suit my reading level.	34.71%	40.59%	14.12%	7.06%	3.53%	3.96	1.05	3	0.761***

	I feel that my reading comprehension have significantly improved since using AI tools.	32.35%	31.76%	28.82%	3.53%	3.53%	3.86	1.03	5	0.827***
	AI tools help me apply what I learn from reading to other academic tasks.	34.12%	34.71%	22.35%	5.29%	3.53%	3.91	1.04	4	0.813***
Total of Effectiveness Attitude							3.90	0.86	3	

Key: n = Number of respondents; M = mean; SD = standard deviation; R = rank; r = Pearson correlation coefficient to the intended variable; p < 0.01 (***) = significance levels.

Appendix B**.** *Engagement of Saudi EFL Undergraduates Using AI Tools in Enhancing Reading Comprehension*

Dimensions	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	M	SD	R	r
Cognitive Engagement	AI tools help me develop new ways to approach reading challenges.	29.41%	41.76%	17.06%	9.41%	2.35%	3.86	1.02	3	0.693**
	I consciously apply the strategies I learn from AI tools in my reading.	31.18%	36.47%	18.82%	11.18%	2.35%	3.83	1.07	4	0.497***
	I use AI tools to explore deeper meanings and interpretations of texts.	40.00%	35.88%	16.47%	40.00%	1.18%	4.07	0.96	1	0.562***
	AI tools help me to question and evaluate the information I read.	41.18%	38.24%	14.71%	4.71%	1.18%	3.92	0.88	2	0.711***
Total of Cognitive Engagement							4.14	0.92	1	
Emotional Engagement	AI makes reading more interesting and engaging for me.	37.65%	28.82%	24.12%	7.06%	2.35%	3.92	1.05	3	0.592***
	I feel less overwhelmed when approaching large reading assignments with AI tools.	38.24%	28.82%	23.53%	7.06%	2.35%	3.94	1.06	2	0.638***
	Using AI tools makes me feel supported in my reading journey.	35.88%	30.59%	23.53%	7.65%	2.35%	3.90	1.05	4	0.688***
	I feel a sense of accomplishment when AI tools help me overcome reading difficulties.	37.65%	32.94%	21.18%	7.06%	1.18%	3.99	0.99	1	0.753***
Total of Emotional Engagement							3.98	0.49	2	
Behavioral Engagement	I frequently use AI tools to practice reading outside of class.	35.29%	34.12%	17.06%	11.18%	2.35%	3.89	1.08	2	0.710***
	I dedicate more time to reading when using AI tools.	36.47%	27.65%	25.29%	7.06%	3.53%	3.86	1.10	4	0.796***
	I use AI tools to review the reading materials from class.	36.47%	35.88%	16.47%	8.82%	2.35%	3.95	1.05	1	0.780***
	I regularly explore new features in AI tools to improve my reading.	32.94%	40.00%	12.35%	11.18%	3.53%	3.88	1.10	3	0.811***
	I use AI tools to track my reading progress over time.	26.47%	35.29%	20.59%	15.29%	2.35%	3.68	1.10	5	0.806***

	I set personal goals to improve my reading skills with the help of AI.	25.88%	31.76%	23.53%	16.47%	2.35%	3.62	1.11	6	0.690***
Total of Behavioral Engagement							3.81	0.92	3	

Key: n = Number of respondents; M = mean; SD = standard deviation; R = rank; r = Pearson correlation coefficient to the intended variable; p < 0.01 (***) = significance levels.

Appendix C**.** *Satisfaction of Saudi EFL Undergraduates Using AI Tools in Enhancing Reading Comprehension*

Dimensions	Statements	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	M	SD	R	r
Satisfaction	I would recommend AI-based reading tools to other students.	48.82%	34.12%	11.18%	3.53%	2.35%	4.24	0.95	1	0.856***
	I am satisfied with the variety of AI tools that support my reading development.	41.18%	40.00%	12.35%	4.12%	2.35%	4.14	0.95	2	0.837***
	AI tools have enabled me to tackle more challenging reading materials.	33.53%	38.24%	20.59%	4.12%	3.53%	3.94	1.01	7	0.850***
	I feel that AI tools are worth the time I invest in using them.	41.18%	34.71%	15.29%	6.47%	2.35%	4.06	1.02	4	0.863***
	I am pleased with the overall effectiveness of AI tools in improving my reading.	40.59%	33.53%	16.47%	5.88%	3.53%	4.02	1.06	5	0.888***
	I feel more prepared for reading assessments due to AI-based practice.	30.06%	33.53%	19.41%	7.65%	2.35%	3.95	1.04	6	0.896***
	AI tools have contributed to my overall academic success.	37.06%	31.18%	21.76%	5.29%	4.71%	3.91	1.11	8	0.834***
	AI tools have helped me expand my other language skills.	41.76%	35.29%	16.47%	1.76%	4.71%	4.08	1.04	3	0.816***

Key: n = Number of respondents; M = mean; SD = standard deviation; R = rank; r = Pearson correlation coefficient to the intended variable; p < 0.01 (***) = significance levels.