

Exploring the Effectiveness of ChatGPT in Enhancing EFL Learners' Reading Comprehension: An Experimental Study

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تهدف هذه الدراسة إلى تحديد تأثير
على الفهم القرائي لدى متعلمي ChatGPT
(في اللغة الإنجليزية كلغة أجنبية)
العراق. كانت العينة المتاحة عددهم 60 طالباً
في إحدى الجامعات الحكومية في كربلاء،
العراق. خضع المشاركون الذين استوفوا
معايير الأهلية لاختبارات كفاءة اللغة
(، وبناءً عليه تم تصنيفهم كمجموعة NPT)
متجانسة. تم استخدام العينة العشوائية لتوزيع
الأعضاء على مجموعتين، مجموعة تجريبية
(ومجموعة ChatGPT (استخدمت
(. تم ChatGPT ضابطة (لم تستخدم
تطبيق اختبارات قبلية وبعديّة لتحديد مهارة
الفهم القرائي في بداية ونهاية فترة تعرض
دامت عشرة أسابيع. لتقييم الجوانب المختلفة
للفهم القرائي، تم استخدام الإحصاء الوصفي،

(، t-tests واختبارات للعينات المستقلة)
(. أشارت Cohen's d وقيم كوهين د)
النتائج في الفهم القرائي المقارن إلى وجود
فرق جوهري (ذو دلالة إحصائية) بين
المشاركين في المجموعتين التجريبية
والضابطة. أظهرت المجموعة التجريبية
تحسناً ملحوظاً في القدرة على استيعاب
القراءة، على عكس المجموعة الضابطة التي
أظهرت انخفاضاً طفيفاً [1]. وكشف "د"
(عن حجم تأثير كبير Cohen's d كوهين)
جداً، أظهر تحسناً قوياً في مهارات فهم
القراءة لدى متعلمي اللغة الإنجليزية كلغة
[. ChatGPT) باستخدام EFL أجنبية)
وتبرر نتائج عينة الدراسة استنتاجاً مفاده أن
أدوات الذكاء الاصطناعي، في هذه الحالة
، يمكن اعتبارها فائدة ملموسة ChatGPT
لتعزيز مستوى فهم القراءة بين متعلمي اللغة
الإنجليزية كلغة أجنبية .

الكلمات المفتاحية: الذكاء الاصطناعي ،
متعلمي اللغة الإنكليزية، ChatGPT،
القراءة الاستيعابية

Abstract

This study aimed to determine the impact of
Chat GPT on reading comprehension of
learners of the Iraqi English as a Foreign

Language (EFL). Convenience sampling was used to select the individuals (N=60) in one of the governmental universities in Najaf, Iraq. The tests conducted on the subjects who satisfied the eligibility criteria were made on NPT language proficiency tests after which the subjects were allotted as a homogeneous group. The random sampling was done to collect members of both cooperative groups, treatment group (used Chat GPT), and control group (used Chat GPT not). Pretests and posttests were administered to determine the skill of reading comprehension at the beginning and the end of ten weeks exposure. To evaluate the different facets of reading comprehension, descriptive statistics, t-tests of independent sampling and Cohen d values were used. The gain on comparative reading comprehension has indicated that there exists a significant difference in the participants of both the treatment and control groups. Treatment group demonstrated a considerable improvement in the reading comprehension ability as opposed to control group which demonstrated a minimal decline. The d of Cohen relieved a very large effect size that

showed a strong improvement of reading comprehension ability of EFL learners reading comprehension skills by Chat GPT. The findings of the study sample justify a conclusion that AI tools, in this case, Chat GPT, can be regarded as a measureable benefit to enhance the level of reading comprehension among EFL learners.

Keywords: Artificial Intelligence, Chat GPT, EFL learners, Reading Comprehension

Introduction

Technological adoption in education has tremendously changed the language learning setting, especially by artificial intelligence (AI) applications. ChatGPT has gained a lot of interest since its release in November 2022 as it has possible uses in the education sector. Technology based learning facilities give learners ample interactive and real-life experiences that enable them to interact with the target language, and as such, support meaningful acquisition of skills. Moreover, educational technologies have been found to enhance motivation and autonomy of learners giving

them the opportunity to be more in control of their learning process.¹

The use of artificial intelligence into language learning has brought about new and helpful methods, especially through the use of smart chatbots. These systems rely on ordinary language processing and machine learning to mimic actual conversations, this helps learners get quick feedback and have personalized learning capabilities. A great example is ChatGPT that is built on advanced language prototypes capable of creating responses that are comprehensible and contextually appropriate, frequently approximating human communication.

Reading comprehension is regarded as an important but challenging skill for students learning English as a Foreign Language (EFL). To read efficiently, well students need to recognize main ideas, comprehend details, make interpretations, and think critically about texts. Nevertheless, many learners' face difficulties with reading due to a limited expressions, lack background

information, and not using helpful reading strategies like skimming, scanning, and predicting. These difficulties frequently lessen their confidence and encouragement to read the texts.

Because of this, today's teaching methods putting more emphasis on interactive and strategy-based instruction to improve understanding skills. In this situation, ChatGPT can be helpful tool. It can act as a fundamental learning helper by posing guiding questions, clarifying unfamiliar vocabulary, longwinded texts, and breaking down difficult passages into simpler notions. It also permits learners to training at their personal pace, which fosters self-regulating learning and lessens anxiety regularly related to classroom contribution.

Extra main benefit of AI-supported tools is their capacity to adapt to unique learners' requirements. ChatGPT can change the difficulty level, give repeated elucidations when required, and quick answer to learners' questions. This sort of support

¹ Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big?

Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency, 610–623. <https://doi.org/10.1145/3442188.3445922>

helps learners regularly improve their understanding and create better reading strategies. Additionally, these tools can boost students' active involvement with texts by prompting them to think, analyze, and respond instead of just reading passively.

In general using AI in language learning, particularly with tools like ChatGPT, shows a hopeful path for enhancing reading comprehension between EFL learners. These technologies offer interactivity, personalization, and continuous help, which can assist learners tackling common challenges and growing in to more confident and independent readers.

Though interest in AI-based language learning is increasing quickly, but there is still not enough solid research looking out how tools like ChatGPT affect reading comprehension. some studies have looked at how it influences writing skills and their students views AI-assisted learning ,but still there is a noticeable gap in experiments

that directly measure its impact on reading performance for English as a foreign language EFL learners. The lack of evidence makes it hard to make strong conclusions about how effect it is in this area.

Additionally, worries about s related to accuracy, consistency, and the ethical use of AI show how important it is to carry out well planned studies. This kind of research is crucial for assessing the real educational benefits of these tools and making sure they are used in ways that are truly help learning. Without thorough investigation in students' performance come from technology or other outsides influences. There for, more experimental research is needed to give us better understanding of how to effectively include AI in reading lessons.²

Consequently, the current study is to examine its effectiveness of ChatGPT to improve reading comprehension among Iraqi students of English as a Foreign Language (EFL). This aim can be achieved

² Taj, H., Ali, F., Sipra, M. A., & Ahmad, W. (2017). Effect of technology enhanced language learning on EFL learners' motivation. International Journal of

through an experimental strategy that compares the presentation of a treatment group, which will practice ChatGPT as part of the learning course, with a control group that depends on traditional teaching.

The aim of this study is to shed light on the obvious gaps in the existing literature regarding. Empirical support for the role of Chat GPT's in reading development. Although many previous researches have shed light on learners' attitudes toward AI tools or their intended use , simply a limited number of experimental research have measured their real influence on specific language abilities, mainly reading comprehension.

As a result, the focus of this research will be on defining whether integrating ChatGPT into reading activities can lead to tangible improvements in students' understanding. Through engaging a two-group experimental design, this study aims to offer more concrete data about the effectiveness of AI-supported learning in

improving reading results, offering insights that suggest ideas for future teaching practices and educational strategies.³.

Recently, Technology has grown to become an fundamental part of modern language education, playing a main part in how learning takes place nowadays. The environments of Digital learning provide learners a golden chance to cooperate with authentic resources and practice the target language outside the bounds of the classroom. This kind of experience supports learners involve more actively, which is significant for developing actual language proficiency.

When it comes to teaching reading, technological tools provide access to a wide range of texts and learning resources. They also allow students to receive quick feedback and apply different reading strategies more easily. In addition, these tools can make the learning process more

³ Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. Learning and

Individual Differences, 103, 102274.
<https://doi.org/10.1016/j.lindif.2023.102274>

flexible and interactive, although sometimes learners may still need guidance to use them effectively. Overall, using technology in reading instruction can support better understanding, even if it is not always used in the best way.⁴

It has also been suggested that using technology in teaching can positively influence students' motivation and independence. When learners are given access to flexible and interactive digital tools, they often become more responsible for their own learning, and sometimes more interested too. This can make them participate more actively, although not all students respond in the same way.

This sense of autonomy is especially important for developing reading comprehension. Effective reading is not just about understanding words, but it also requires active thinking, using different strategies, and continuous interaction with the text. So, when learners are more

involved and take control of their learning, they are more likely to improve their reading skills, even if the progress may differ from one learner to another.⁵

The recent developments in artificial intelligence (AI) and natural language processing (NLP) have resulted in the realization of intelligent tutoring systems that can deliver adaptive feedbacks and personalized learning experiences. These systems are created in such a way that they mimic human interaction, react to the input of the learners and assist in the development of skills using scaffolded directions. This kind of technological advancements has increased the opportunities of personalized reading support and teaching using strategies .

ChatGPT has become one of the most popular AI-powered systems in the sphere of education. ChatGPT is a large-scale language model developed by OpenAI and can produce linguistically accurate,

⁴ Lončar, M., van Deursen, A. J. A. M., & Raaijmakers, S. F. (2021). Mobile learning in higher education: A systematic review. *Computers & Education*, 172, 104235. <https://doi.org/10.1016/j.compedu.2021.104235>

⁵ Gikas, J., & Grant, M. M. (2013). Mobile computing devices in higher education: Student perspectives on learning with cellphones. *The Internet and Higher Education*, 19, 18–26. <https://doi.org/10.1016/j.iheduc.2013.06.002>

contextually suitable, and coherent responses. Its vocabulary explanation capacity, text summary skills, understanding of comprehension questions and clarifying skills give it a potentially useful tool in supporting the development of reading comprehension among EFL settings.

Large-scale language models like ChatGPT are built to respond in a coherent and contextually relevant manner and generate human-like responses to user input. The models are based on deep learning structures that are trained on large volumes of textual data and, therefore, allow them to handle more complicated linguistic forms and to offer detailed explanations. These abilities can be used in educational settings to clarify vocabulary, explain the meaning of a text, summarize passages and answer questions of comprehension, thus providing possible support to the development of reading comprehension in EFL students.⁶

In addition to simple text-generation, ChatGPT may offer personalized feedback and scaffolded explanations based on the level of skills that learners possess. This can be combined with the breaking of complex sentences, formulation of guiding questions and provision of summaries that facilitate the understanding process in reading. This adaptive support is consistent with the current ideas of AI-assisted learning, where individualized learning and instant feedback are regarded as the essential elements of the effective teaching process.⁷

Nevertheless, the introduction of ChatGPT to the language learning environment (regardless of its possible pedagogical advantages) brings up a number of issues. A key concern is connected to the idea of academic integrity because excessive use of AI generated answers can diminish learner ability to engage their cognitive capacities of their own. Also, the difference in system outputs

⁶ Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency, 610–623. <https://doi.org/10.1145/3442188.3445922>

⁷ Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., & Kasneci, G. (2023). ChatGPT for good? On opportunities and challenges of large language models for education. Learning and Individual Differences, 103, 102274.

and production of incorrect or unsubstantiated data necessitate the critical assessment of responses by learners. These issues indicate the need to implement these with high levels of structure and supervision, especially when conducting experimental studies to test real learning gains and not just task completion.⁸

Even though the available literature offers several important theoretical debates on opportunities and challenges of ChatGPT in language learning, there is a lack of empirical studies specifically aimed at examining its specific role in reading comprehension. A large portion of the modern literature focuses on the writing abilities, the overall performance of the learners in the language, or the perceptions of the learners instead of the controlled experiments. Thus, it is advisable to conduct additional research to identify the statistical significance of the difference in the comprehension performance of EFL

learners once ChatGPT is applied to their reading instruction. The given gap is critical in order to inform the evidence-based incorporation of AI technologies into language education.⁹

Problem Statement

Nevertheless, even though the process of artificial intelligence tools integration into the language education sphere has been rather rapid, there is still a lack of empirical data on the actual efficacy of ChatGPT in enhancing certain language-specific skills, specifically the reading comprehension in EFL students. Although the theoretical possibilities of AI-powered tools to improve the learning process have been noted in the available literature, most researchers studied how learners perceived it, improved their writing, or language overall instead of subjecting learners to

⁸ Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. RELC Journal. <https://doi.org/10.1177/00336882231162868>

⁹ Kasneci, E., Sessler, K., Küchemann, S., Bannert, M., Dementieva, D., Fischer, F., & Kasneci, G. (2023).

ChatGPT for good? On opportunities and challenges of large language models for education. Learning and Individual Differences, 103, 102274. <https://doi.org/10.1016/j.lindif.2023.102274>

controlled experimental assessment of the outcomes in reading comprehension.

The EFL learners still experience problems with reading comprehension in most of the Iraqi university settings because of their little vocabulary knowledge, and use of traditional teacher-centered instruction. The lack of interactive and personalized support systems can also further spell doom on the capacity of the learners to actively construct texts and acquire higher-order understanding of the text.

Thus, the research issue of this study is the possibility of statistically significant improvement in the reading comprehension of EFL students with the use of ChatGPT in reading instruction as opposed to the traditional method of reading instruction.

Study:

1. Consider how well ChatGPT can be used to improve reading comprehension in Iraqi EFL students.

2. Compare and contrast the reading comprehension performance of students who use ChatGPT to students who are taught in the traditional manner.

3. Assess the degree of improvement based on pre-test and post-test.

4. The effect size of the influence of ChatGPT in reading comprehension will be determined..

Research Questions

1. Is there any statistically significant difference between the treatment and control group in pre test scores in reading comprehension?
2. Do the treatment group and control group differ in the post-test scores of reading comprehension statistically significantly?
3. Does the ChatGPT use result in a significant effect on reading comprehension in EFL learners?

4. What is the size of the ChatGPT effect size on reading comprehension performance?

Research Hypotheses

H1: The treatment and control groups have no statistically significant difference in the pre-test scores.

H2: The post-test scores in the control group and the treatment group vary statistically significantly in the treatment group.

H3: Treatment group will show a pronounced increase in pre-test and post-test reading comprehension.

H4: ChatGPT will indicate a significant effect size on the reading comprehension performance of EFL learners.

Significance of the Study

The importance of the study may be considered both theoretically and practically.

Theoretical Significance:

The paper is a valuable addition to the emerging research on using artificial intelligence in language education since it offers concrete evidence on the effect of ChatGPT on reading comprehension. It also fills a research gap because it pays specific attention to experimental measurement in lieu of perceptions and general attitudes.

Practical Significance:

The results could offer a basis of evidence to language teachers on how to incorporate the use of ChatGPT in reading lessons. Also, the knowledge of AI implementation can help curriculum designers and institutions of higher learning to implement AI tools effectively to achieve improved reading comprehension.

Second: Theoretical Background and previous studies

1. Types of Chatbots and Their Role in Language Learning

Smart chatbots have gained more and more popularity in the language learning world thanks to the fact that they can give instant, human-like interactions to learners (Kohnke, Moorhouse, and Zou, 2023). Conventional rule based chatbots are based on a set of pre-programmed scripts and are not able to respond to questions to which they lack prior knowledge in their programmed knowledge base, restricting their application in dynamic learning. Conversely, chatbots powered by AI, like ChatGPT, apply natural language processing (NLP), machine learning (ML), and deep learning (DL) to





become closer to mimicking natural conversations, continuously improving its learning based on its interactions, and giving context-based feedback. These features can make chatbots useful as language-learning tools to provide learners with the opportunity to train reading comprehension, vocabulary, and communication skills responsively and in an interactive format..¹⁰

2. Rich Linguistic Input and Reading Comprehension

Effective second language learning and reading comprehension development heavily rely on a rich linguistic input (Kohnke, Moorhouse, and Zou, 2023). ChatGPT has the potential to present learners with a broad array of textual information, such as authentic passages, vocabulary

clarification in context, and the sentence formation. As an example, ChatGPT can explain the meaning of the learned words using part-of-speech, sample sentences, and the definitions of the unfamiliar words in the first language of the learner in case it should be translated. This individual contribution assists students to observe and interpret linguistic characteristics in context, which develops more productive strategies of comprehension. Learners are also able to work with the texts at any time which is also due to the availability of this rich input and this facilitates the consistent practice and gradual development of reading skills..¹¹

3. Interactivity and Adaptive Learning:

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¹⁰ Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning.

RELC Journal, 54(2), 537–550.

<https://doi.org/10.1177/00336882231162868>

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. RELC Journal, 54(2), 537–550. <https://doi.org/10.1177/00336882231162868>

The fact that ChatGPT can adjust to the proficiency level of learners and offer them interactive and scaffolded learning is one of the most important strengths of the provider. ChatGPT has the ability to scale the difficulty of reading passages and conversations, ask numerous inferences and expansion queries, and provide real-time feedback, depending on the responses of learners (Kohnke, Moorhouse, and Zou, 2023). This interactivity promotes independent learning where the students are given guidance according to their requirements and they learn reading comprehension on their own. The flexibility of ChatGPT also means that the learners are neither too easy nor too hard, which is crucial to maintaining engagement and motivation in EFL settings.¹²

4. Formative Assessment and Comprehension Question Generation

Proper reading teaching must be evaluated continuously to check the understanding and give feedback. ChatGPT is able to formulate questions of understanding, multiple-choice questions, and open-ended questions, giving learners an opportunity to assess what they have learned in texts on their own (Kohnke, Moorhouse, and Zou, 2023). This on-the-fly formative feedback assists the learners in recognizing the areas of their lack of understanding, strengthens the proper interpretations, and directs the further reading practice. ChatGPT offers personalized exercises, which can be used to implement differentiated instruction, considering the learners with.

different reading proficiency levels and ensuring that the learners receive the right challenges and reinforcement.¹¹

5. Motivation, Engagement, and Learner Confidence

It is demonstrated that AI-based chatbots can enhance the motivation, engagement, and confidence of the learners during the target language use (Kohnke, Moorhouse, and Zou, 2023). The ChatGPT allows students to be less shy and feel that there is no transactional distance between them and the teacher, which will motivate them to engage more in reading assignments. Offering the opportunities to work in a non-judgmental environment and experiment with language, make errors, and correct ones independently, which is a key to the development of the skills of reading comprehension, ChatGPT can help learners do the same. Also

learners will have the opportunity to read texts at their own pace, which will increase their autonomy and intrinsic motivation.¹⁴

6. Challenges and Risks in Using ChatGPT

The application of the ChatGPT in the reading comprehension teaching is not unlimited despite its potential. The issues raised are inaccuracy in the creation of content, cultural biasness in training materials, and the possibility of overdepending on AI, which can decrease critical reading of texts by learners (Kohnke, Moorhouse, and Zou, 2023). Moreover, ChatGPT fails to provide references and citations to its explanations, which begs the question about academic

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¹¹ Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning.

RELC Journal, 54(2), 537–550.

<https://doi.org/10.1177/00336882231162868>

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. RELC Journal, 54(2), 537–550. <https://doi.org/10.1177/00336882231162868>

integrity and the originality of information. Consequently, students need to become digitally literate to analyze the outputs of chatbots and, instructors, to advise students on the right and ethical application of chatbots in language learning.¹²

7. Digital Competence for Effective Use

The successful use of ChatGPT should supply teachers and learners with high-level digital skills (Kohnke, Moorhouse, and Zou, 2023). The teachers should have the ability to create tasks that make the best use of the affordances of ChatGPT, including adaptive reading content, generation of comprehension questions, and guided feedback. In their turn, learners have to know how to behave with the tool, what its limitations are, and how to use it in a morally sound manner. The acquisition of these competencies

guarantees that the ChatGPT will be used to supplement, but not substitute, the traditional approach to instruction, which results in improved reading comprehension scores in EFL classrooms.¹⁶

2- Reading Comprehension and Its Core Components

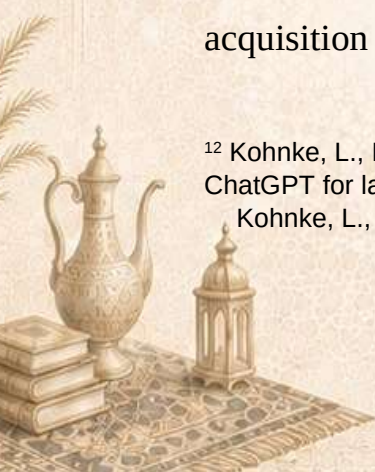
The process of reading comprehension is quite complicated and multidimensional as it involves combining multiple cognitive and linguistic skills. It goes beyond mere word recognition and fluency to include higher order inferential and text building processes what is commonly known as the situation model. The complexity of reading comprehension is critical to creating effective tests and teaching

¹² Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning.

Kohnke, L., Moorhouse, B. L., & Zou, D. (2023). ChatGPT for language teaching and learning. RELC Journal, 54(2), 537–550. <https://doi.org/10.1177/00336882231162868>

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2. The Role of Inferential Processes

An inference is the cognitive process through which a reader creates or recalls information that has not been clearly mentioned in the writing. Inferential processes help the readers to relate various sections of the text, supply the gaps of information, find the reason and cause and effect relationships, and create a consistent mental image of the text. The study indicates that inference making skill is a good predictor of overall reading comprehension in all ages and in all types of media, including oral stories and written texts. Notably, these

programs, especially in those students that fail to reach the anticipated levels of proficiency.¹⁷

1. Component Skills of Reading Comprehension

Many skills depending on each other, such as word decoding, reading fluency, vocabulary, language comprehension, background, inference-making, comprehension monitoring, and working memory are important to the reading comprehension performance. The interaction of these skills helps the reader to receive the sentences, combine meanings through out the text and develop coherent representations of a text. Inference-making and background knowledge are among them, and they are believed to be the foundations of effective reading comprehension, as they help a learner to understand the meaning of the text that is not explicitly stated in it..¹⁸

¹⁷ Afflerbach, P., Cho, B.-Y., & Kim, J.-Y. (2015). Assessment of reading processes and products.p122

questioning when there is feedback, teaching strategy: thinking aloud, self-questioning, using graphic organizers to make connections and events between them. Although studies have indicated that these interventions are better at enhancing inference-making on specific tasks, there is not yet enough evidence to support how these interventions relate to generalizing to broader comprehension outputs. However, the results can be used to highlight the need to incorporate inference-based instruction as part of the reading curriculum.²⁰

4. Assessment of Reading Processes

Good evaluation draws the distinction between the process of reading (that meaning is built) and the reading product (the end result of meaning, in the form of a mental representation). Most of the

¹⁸ Barth, A. E., Barnes, M., Francis, D. J., Vaughn, S., & York, M. (2015). The Bridging Inferences Test: Measuring inferential processing in reading comprehension.p33

are skills that are acquired at an early age, and in some cases before one is even taught how to read; this indicates that early interventions on the skills of inferencing may avert the subsequent understanding problems.¹⁹

3. Instructional Interventions for Inference Skills

There are several teaching methods that have been shown to be effective in improving the inferential skills of students that, in its turn, facilitates reading comprehension. These are: preteaching background knowledge to focus attention on important text components, systematic

processing, multiple choice tasks, cloze tasks which detect reasoning patterns and tests that assess response accuracy and response times to assess in-text inferential processes. These tests complement the formative assessment, which enables teachers to know what processes when they encounter difficulties in comprehending the material, and then customize instructional strategies.¹³

5. Policy and Practical Implications

The inference-oriented instructional and assessment tools have been developed with the help of federal efforts and funding of research. Some of the best policy implications are the need to focus on early intervention to build the ability to use inferences before engaging in formal reading instruction, teacher training in teaching

conventional measures are all product focused but there is a growing

¹⁹ Cain, K., Oakhill, J., Barnes, M., & Bryant, P. (2001). Comprehension monitoring and working memory in reading.

Kendeou, P., McMaster, K. L., & Christ, T. J. (2016). Reading comprehension: Core components²⁰ and processes. Policy Insights from the Behavioral and Brain Sciences, 3(1), 62–69.

<https://doi.org/10.1177/2372732215624707>

trend of using new measures that are all inferential. Such instruments comprise cloud based measures of time to read and response, open ended prompts to assess the current inferential

¹³ Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence.

The study involved **two groups**:

1. Experimental group: The members of this group had been subjected to structured intervention with the help of ChatGPT, including the guided reading activities, comprehension exercises, and interactive discussions with the AI model.

2. Control group: The members of this group were provided with traditional classroom education and were not exposed to ChatGPT. The conventional techniques comprised of reading activities in form of textbook reading, teacher-centered discussion, and paper-based understanding tasks.

It used a pretest-posttest design where the pretest involved a measurement of the skills of reading comprehension and the posttest involved the same measure at the end of

methods that make inferences easy to form, combination of process-based assessment and standardized assessments, and constant monitoring of intervention success in decreasing the gap in reading proficiency.¹⁴

3. Research Methodology

3.1 Research Design

The research used a quantitative experimental design to examine how effectively ChatGPT can be used as an online resource with English as a Foreign Language (EFL) students to improve the quality of reading comprehension skills. The rationale behind the choice of the experimental design is that it can be used to determine a cause-and-effect relationship between the independent variable (use of ChatGPT) and the dependent variable (reading comprehension performance).

¹⁴ Christ, T. J., & White, T. (2015). COMPreading: A cloud-based assessment of reading processes.

- In EFL program and has basic intermediate level of English proficiency.
- No history of using ChatGPT or other education-related AI-based technologies.
- Genuineness to attend all intervention sessions/assessments actively.

In order to make the groups homogeneous, all the interviewees were first to take the NPT (Najaf Proficiency Test) that would determine the overall level of English language knowledge. According to the findings, the students were randomly allocated to the experimental and control group which minimised possible biases and provided comparable groups so that they can be statistically analysed.

the ten weeks of the intervention. This will enable one to study both the changes that occur within a group in the course of time and the differences that exist between the groups, which will form a strong model of identifying the effectiveness of ChatGPT in facilitating reading comprehension abilities. The design is also useful in controlling extraneous variables and I formed differences so that a more consistent comparison is possible.

3.2 Participants

The target of the study was 60 undergraduate students who studied in a governmental university in Najaf, Iraq. The participants were recruited through convenience sampling, which was based on availability and voluntary participation to take part in the study.

In order to provide reliability and validity of the study, the following criteria were used to eligibility:

2. Reading Comprehension Test (Pretest and Posttest)

Purpose: To test the reading comprehension of the participants.

Structure The test consisted of several elements, including:

Literal comprehension: Reading the text.

■ Inferential understanding: Ability to make logical conclusions based on the implicit information.

■ Integrative understanding: Relating concepts in various parts of the reading.

Gold standard: Evaluation of the quality and relevancy of the presented information.

○ Procedure: The pretest was done prior to the intervention to

3.3 Research Instruments

The study employed several **standardized and purpose-designed instruments** to collect data:

1. Language Proficiency Test (NPT)

- Purpose: To test the English proficiency of the students before the intervention.
- Role: Assured that the two groups were not too different in their language skills, and, thus, proficiency was controlled as a confounding factor.
- Administration: It is a classroom-based test under timed conditions and standardized instructions are followed.

4. Pretest performance to measure the primary level of reading comprehension.

5. Intervention: The intervention will be implemented by:

○ Experimental group:

Learners who used ChatGPT to read, gross comprehension activities besides guided thoughts. The AI tool was capable to provide instant feedback, clarifications and illustrations to help comprehension.

○ Control group: Students proceeded with traditional classroom-based teaching comprising of textbook reading, answering comprehension questions and discussing topics taught by the teacher.

6. The posttest would be administered at the end of ten weeks in order to assess the differences in reading comprehension.

construct a baseline. The ten-week intervention was followed by the posttest, which was administered to define the levels of improvement. The two tests were set to be similarly challenging to allow the same level of progress in the tests.

3.4 Research Procedure

The study has been performed in a methodical flow of steps in order to deliver the methodological rigor and dependability of results:

1. Recruitment of contestants that passed the enclosure criteria.

2. Measurement of English proficiency over the use of NPT to create a group homogenous.

3. Randomization of the contestants into experimental and control groups so as to lessen selection bias.

statistically significant difference between the experimental and control group prior to and after the intervention.

○The within-group improvements between pretest and posttest were tested using paired samples t-tests.

3. Effect Size (Cohens d): This is computed to determine how important the differences were in actual educational terms that is higher than statistical significance.

The analyses made an extensive assessment of the effects of ChatGPT on reading comprehension that allowed concluding on the statistical and educational significance of the AI-based intervention on EFL learners.

IV. Results and Discussion

1. Pre-Test Results

The outcomes of the pre-test marks of the experimental group (ChatGPT was used) and the control

7. Gathering and statistical analysis of data such as descriptive and inferential statistics to compare the performance of the two groups and evaluate the efficiency of the intervention.

3.5 Data Analysis

Data obtained were analyzed in detail by SPSS (or another statistical software package) to test group differences and within-group differences:

1. Descriptive Statistics: Both groups were summarized by calculating mean scores, standard deviations and other measures of central tendency and dispersion as a summary of the data to give an overview of the level of performance.

2. Inferential Statistics:

○The independent samples t-tests were done to find out whether or not reading comprehension showed a

statistically significant ($t = 5.21$, $p < 0.001$).

Furthermore, the influence size calculated using Cohen's d showed a very large influence ($d = 1.27$), proposing a strong effect of the interference. This result approves that the usage of ChatGPT had a important positive influence on the reading comprehension skill of EFL learners.

3. Comparison Between Experimental and Control Groups

Post and pre-test marks were compared to disclose the validations of ChatGPT. The experimental group significantly developed their reading comprehension however the control group had very slight gains. The marks in the gains show that AI-mediated learning circumstances could be used to increase inferential abilities, vocabulary learning, and comprehension

group (ChatGPT was not used) were determined to detect their initial reading comprehension ability. Descriptive statistics presented that the mean scores of both groups were not different and so there was homogeneity prior to the intervention. The independent sample t -test did not reveal any statistically significant difference between the groups ($t = 0.58$, $p > 0.05$), which is why both groups commenced with a similar level of reading comprehension.

2. Post-Test Results

The post-test outcomes showed that the experimental group proved a significant development after ten weeks of disclosure to the intervention. The graphic statistics displayed that the mean score of the experimental group was remarkably upper than that of the control group. Additionally, the outcomes of the independent-samples t -test showed that this variance was

monitoring, which are crucial components of reading comprehension.

Group	Pre-Test Mean	Post-Test Mean	Gain
Experime ntal	48.7	72.3	+23.6
Control	49.2	51.1	+1.9

results are reliable with preceding research emphasizing the significance of inference-making and prior knowledge in reading comprehension (Kendeou, McMaster, and Christ, 2016; McMaster and Espin, 2015). They likewise support the studies highlighting the usefulness of AI-based tools in language learning, mainly in offering personalized and context-sensitive support (Li et al., 2022; Zhang and Wang, 2021).

4. Interpretation of Results

The comparatively high level of development witnessed in the experimental group can be referred to many factors. ChatGPT conferred learners with cooperative reading activities, immediate feedback, and adaptive upholding, which heartened them to involve more deeply in inferential thinking to shape a obvious mental illustration of the texts. These

V. Conclusion and Recommendations

1. Main Findings

1. ChatGPT was set up to develop reading comprehension marks amongst Iraqi EFL learners over a 10-week intervention period.
2. The experimental group revealed a statistically major development in reading comprehension likened to the control group.
3. AI-based learning tools can help learners in developing inference skills, increasing vocabulary, and enhancing general text understanding.
4. Customary teaching methods on your own may not accomplish the equivalent level of development in reading comprehension results.

In contrast, the slight development witnessed in the control group proposes that customary classroom education on your own may not be enough to products significant advantages in reading comprehension over a relatively short time. This is in keeping with previous studies that have recounted ongoing problems learners confront in applying inferential strategies and extracting meaning from texts successfully (Oakhill and Cain, 2012; Rapp et al., 2007).

Generally, the outcomes show that integrating AI tools like ChatGPT into EFL education can produce significant developments in students' reading comprehension. This improvement seems to be connected to enlarged learner commitment, enriched inferencing abilities, and enhanced activation of background knowledge throughout the reading procedure.

resources and develop
general reading
comprehension

3. Suggestions for Future Research

1. To study the long-term effects of using ChatGPT on students' reading comprehension over a number of academic semesters, so as to understand whether its influence is sustained or changes over time.
2. To explore the influence of ChatGPT on other language skills, including writing, listening, and speaking, and conclude whether its benefits lengthen yonder reading comprehension.
3. To evaluate how learners at altered proficiency levels advantage from using ChatGPT in reading activities, and whether its usefulness differs according to students' language capability.
4. To discover the integration of ChatGPT with other digital learning tools to develop a more comprehensive AI-based learning system that helps many aspects of language acquisition.

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2. Recommendations for Teachers

1. Integrate AI applications like ChatGPT into reading comprehension activities to encourage more cooperating and engaging learning experiences.
2. Hearten students to actively conclude meaning and create questions about the text, using AI as a helpful tool throughout the process.
3. Categorize areas where learners face difficulties and provide targeted support through AI-based feedback and explanations.
4. Combination customary teaching methods with AI-assisted activities so as to capitalize learning

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