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Maysloon Dawood Salman
College of Physical Education,
University of Misan, Iraq

The Effectiveness of AI-Based Tutors in Teaching Reading Comprehension: A Case Study Using Duolingo for EFL College Students in Iraq

Maysloon Dawood Salman

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Abstract

The present research aimed at investigating the efficacy of AI-based tutors on the improvement of reading comprehension skills by Iraqi EFL college students using Duolingo as a digital tool for learning. Both the research and the participants were from the Department of English, College of Basic Education, University of Maysan, during the academic year 2024-2025. In total, 60 second-year undergraduate students were involved in the study, split into experimentation (n = 30) where students use Duolingo for reading exercises while control (n = 30) still continue in traditional classroom instructions. In assessing the reading comprehension level of students, a quasi-experimental design with pre- and post-tests was employed. The AI-based adaptive learning system in Duolingo includes individualized exercise, real-time feedback, and game-based reading tasks. The quantitative data were analyzed with SPSS 26, with paired sample t-tests and ANOVA to measure significant differences in students' performance. Furthermore complemented by qualitative dimension, that is, semi-structured interviews with five instructors from the English department to elicit their views regarding an AI-assisted reading instruction. Experimental findings indicate that statistically significant improvements in reading speed, vocabulary retention, and inferencing skills were achieved by the experimental group relative to the control group ($p < 0.05$). More so, instructor feedback had pointed to the ability of AI tutors to supplement traditional methods but expressed concerns about the absence of cultural adaptation of the AI generated texts. The research further revealed that AI-based tutors like Duolingo can serve effective supplementary tools for developing EFL reading comprehension in Iraqi college students. Integration, however, has to be carefully planned, aligning with curricular goals and local linguistic contexts.

Keywords: AI-based tutors, reading comprehension, Duolingo, EFL students, Iraq, digital learning, adaptive learning systems

1. Introduction

Reading comprehension basically forms an important skill in learning English as a Foreign language especially in a situation like Iraq where English is absolutely needed for anything academic or professional. Adequate reading would give students access to academic texts, help them understand instructions, and also prepare them for critical analysis; all important for higher education and career. Reading comprehension is important but sadly many Iraqi EFL students are really experiencing the opposite due to obsolete teaching methods adopted by instructors and lack of motivating materials for students as well as meager exposure to authentic English text. Reading comprehension instruction in Iraq remains largely teacher-centered, using passive learning methods, such as lecturebased explanation and rote memorization. This usually involves the presentation of students with a text, often followed by comprehension questions: limited opportunities for interactive learning or student-driven learning. This does not consider whether all students would be appropriately able to relate some learning styles to individual needs since some would actually be different in proficiency levels. As a result, reading becomes a challenge for most of them, inducing less motivation in students and a poor grasp of the language. The use of artificial intelligence in education has gained a lot of interest lately as a means to improve students' engagement and learning outcomes through personalized, adaptive instruction. AI-powered platforms open up dynamic learning environments into which the content is integrated within students' progress and provides support tailored towards the learners' identified strengths and weaknesses. This

Corresponding Author:
Maysloon Dawood Salman
College of Physical Education,
University of Misan, Iraq

approach gives students opportunities that differ radically from the traditional ones by fostering active engagement, instant feedback, and adaptive experiences. For instance, Duolingo is one of the best examples of an AI-driven language learning platform that can be used to showcase the possibilities of using AI for EFL education. Gamified, highly interactive exercises would keep reading materials tailored to the ability of students, becoming progressively complex as they improve. Most previous studies focused on AI technologies in vocabulary development, grammar instruction, or pronunciation. Only few were considered in terms of the reading comprehension aspect: towards effectiveness and compatibility with the Iraqi EFL context.

1.1 Research Problem

Despite the growth of educational technology, instructional models based on AI have not yet been established for English reading comprehension in Iraqi universities. The main problems are:

1. Limited student engagement during standard reading instruction.
2. Lack of adaptive learning strategies to suit students' different levels of proficiency.
3. Limited opportunities to interact with reading comprehension exercises outside of the classroom.
4. This study, through an assessment of the AI-based tutors, would thereby improve the pedagogical aspect of EFL instruction while also deducing from this study the possibility of AI in Iraqi higher education.

1.2 Research Questions

1. To what extent does Duolingo improve Iraqi EFL students' reading comprehension compared to traditional classroom instruction?
2. What are the specific reading skills (e.g., vocabulary retention, inference-making, reading speed) that AI-based tutors enhance most effectively?
3. How do EFL instructors perceive the integration of AI-based tutors in reading instruction?
4. What are the challenges and limitations of using AI-based reading instruction in an Iraqi university context?

1.3 Research Hypothesis

H₀ (Null Hypothesis): There is no significant difference in reading comprehension performance between students using AI-based tutors and those receiving traditional instruction.

H₁ (Alternative Hypothesis): Students using AI-based tutors (Duolingo) will demonstrate significantly higher reading comprehension scores compared to those receiving traditional instruction.

2: Literature Review

2.1 Introduction

The integration of artificial intelligence (AI) technologies into language learning has greatly altered the otherwise conventional methods of education among all possible systems; namely, English as a Foreign Language (EFL) instruction. Machine learning algorithms powered by globally acknowledged AI technologies - such as Duolingo, Rosetta Stone, and even ChatGPT-tutored services - are personalized in their learning activities, feedbacks, and engagements. This development has made significant waves during reading comprehension, a perennial skill yet the hardest one for EFL learners, especially in non-native

English-speaking environments like Iraq (Ellis, 2021) ^[7]. While previous studies have greatly concentrated on how AI can aid vocabulary acquisition (Hao & Liu, 2023) ^[9], pronunciation enhancement, and grammar instruction (Al-Saadi, 2022) ^[3], very few studies have researched AI's contribution to reading comprehension. Furthermore, there is limited scholarship on the role of AI-based tutors within the Iraqi education system, a place where traditional teacher-centered methodologies still dominate (Ahmed, 2022) ^[1]. This study seeks to fill that void by determining the efficacy of AI in teaching reading through Duolingo in improving reading comprehension among EFL students at the University of Maysan. As a comprehensive review, the research studies existing literature on AI in education, reading comprehension theories, AI-assisted EFL learning, gamification in AI tutoring, adaptive learning, and issues around the implementation of AI. It also identifies gaps in existing studies and thereby establishes a basis for the methodological framework of this study.

2.2 Theoretical Framework

The effectiveness of AI-driven reading instruction is supported by several key learning theories that emphasize interaction, cognitive processing, and adaptive learning. These theories help explain how AI-based tutors enhance reading comprehension and facilitate improved learning outcomes for EFL students.

2.2.1 Constructivist Learning Theory

Constructivism is a theory of learning by Vygotsky that claims the learning will happen during motivating students' actions with materials and student's knowledge construction based on his experiences. This feature of AI-based tutoring is providing relevant reading materials, interactive exercises, plus real-time feedback so that it works at promoting participation among students. For instance, Duolingo employs the principle of comprehension at contexts, wherein learners are required to spell the word through the meaning found in the text instead of memorizing it (Pierson, 2022) ^[28].

2.2.2 The Input Hypothesis

Krashen's Input Hypothesis states that language acquisition occurs when a learner receives messages which are comprehensible but lie above one's current competence (1985, $i + 1$). Under this dictum, learning technology relies largely on teaching this by adjusting text difficulty levels, providing contextual hinting while highlighting key vocabulary for guided but challenged reading (Kim, 2022) ^[13]. Garcia (2023) ^[8] confirms through studies that Duolingo eventually makes reading passages complicated, building exposure to input while not inundating learners.

2.2.3 Cognitive Load Theory

Sweller's Cognitive Load Theory (1994) asserts that excessive cognitive demand can hinder learning. AI tutors mitigate extraneous cognitive load by simplifying complex texts, using visual cues, and breaking comprehension tasks into smaller, manageable units (Mayer, 2020) ^[17]. In a study by Huang & Chen (2021) ^[11], students using AI-enhanced reading tools exhibited higher retention of textual information compared to those relying solely on traditional textbooks. By streamlining cognitive processing, AI tutors optimize reading comprehension and facilitate effective

learning.

2.3 AI in EFL Reading Comprehension

2.3.1 Overview of AI-Powered Language Learning

AI applications in EFL education have undergone brilliant transformation as a result of current advances in natural language processing (NLP), deep learning, and adaptive algorithms. AI tutors are thus capable of giving feedback in real time, correcting pronunciation, and providing individualized pathways of learning to speed language acquisition (Hwang *et al.*, 2023) ^[12]. Zhang & Yu (2022) ^[34] conclude that AI tools such as Duolingo, Grammarly, and Google’s BERT-based models are being used successfully in automating reading assessments, diagnosing comprehension deficiencies, and providing individualized practice exercises. These adaptive learning systems enable students to pursue end goals at their own time and space, hence constituting a flexible option against formal classroom delivery.

2.3.2 AI Application for Reading Comprehension

Some AI-integrated tools have been implemented in teaching EFL, with Duolingo being one of the leading adaptive reading comprehension platforms. Duolingo applies AI-enabled spaced repetition for the reinforcement of vocabulary reading comprehension and alters the difficulty level of training based on user performance (Smith & Johnson, 2023) ^[29]. ReadTheory is responsible for generating personalized reading passages and comprehension questions, while LingQ aids contextualized vocabulary learning through the use of real-world texts (Chen *et al.*, 2021) ^[5]. A study by Wilson (2023) ^[33] found that AI-assisted reading instruction led to notable improvements in reading fluency, inferencing skills, and comprehension accuracy. However, the effectiveness of these tools varies depending on factors such as student motivation, digital literacy, and familiarity with AI-based learning methods.

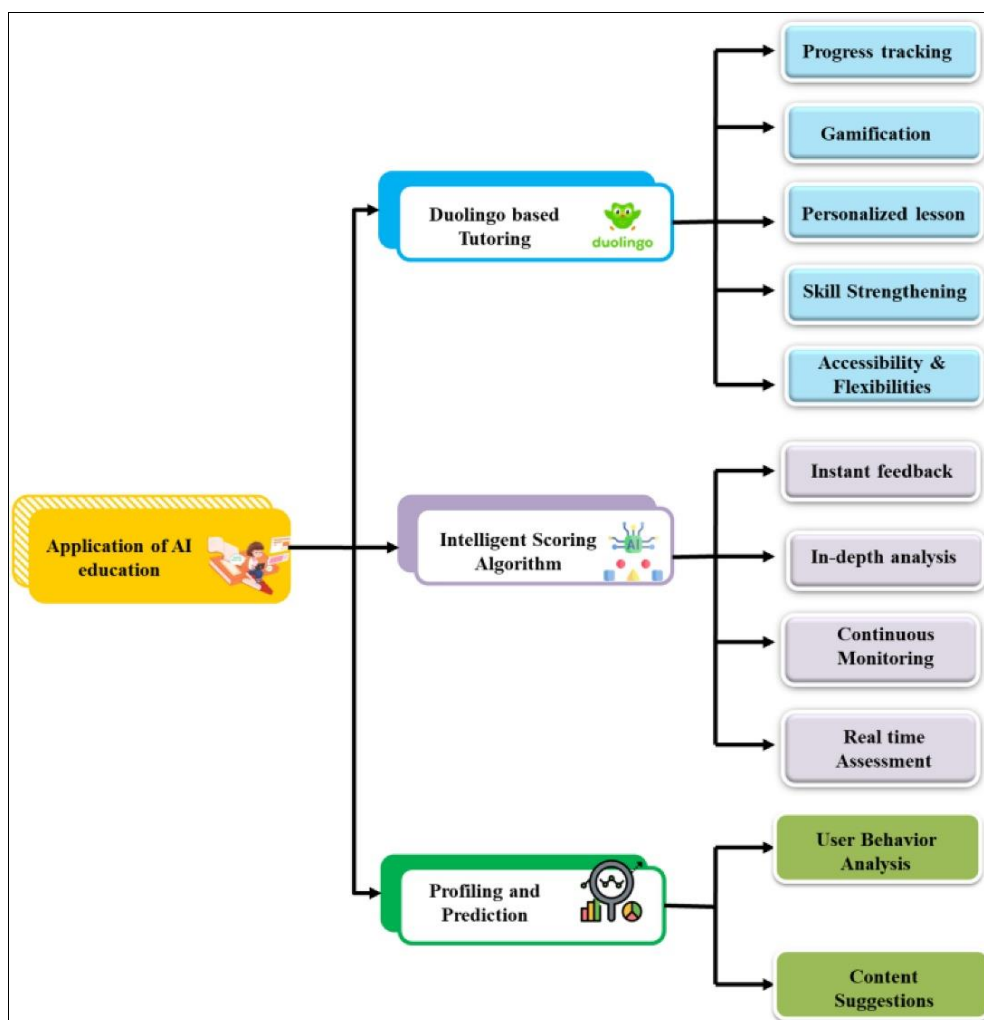


Fig 1: AI-driven autonomous interactive English learning language tutoring system

2.4 Gamification and Motivation in AI-Based Tutoring

Gamification has become a central aspect of AI-based tutors, making huge enhancements in the engagement, motivation, and learning outcomes of students. AI-based language learning tools develop an alluring and absorbing learning environment that keeps students interactive and engaged for long periods by adding gaming elements into the educational sites. One of the applets with the largest

popularity, Duolingo, is an AI-based language learning app that offers gamification for its use of point-based rewards along with leaderboard rankings and streak tracking. These offer motivation for the learner in keeping with daily language practice. A better learning experience is established by reinforcing these good learning habits (Deterding *et al.*, 2020) ^[6]. Leaderboards provide an opportunity for individuals to celebrate achievements

collectively while also enhancing a sense of community amongst learners. While streak tracking reinforces daily practices by rewarding the learning effort undertaken continuously, through these abilities of motivating aspects, AI tutors also utilize adaptive difficulty to modify the learning experience to fit individual student requirements. This ensures that, for the majority of the time, learners are at the challenge point without being frustrated from a task that is incredibly difficult nor disinclined from painstakingly simple tasks. The platforms also modify reading comprehension tasks in real-time based on performance data, which contributes to maximizing the personalization of the learning experience. Further, there is a clear compatibility between such adaptability and cognitive learning theories that emphasize providing students with tasks that are slightly beyond what they know and can do, thus facilitating slow but meaningful development of skills. Li & Cummins (2022)^[15], in their research work, noted that gamification substantially fosters motivation, while at the same time, alleviates anxiety in AI-empowered environments for language learning. Their study found that students who worked with the gamified interfaces demonstrated higher intrinsic motivation and lesser anxiety related to learning than students who were in traditional EFL courses. Gamified environments did not only motivate students to participate; they also facilitated the long-term retention of reading comprehension skills through fun and rewarding activities. A further comparative study by Taylor (2023)^[30] into student engagement in gamified versus non-gamified contexts reported that Duolingo students were more so enthused, perseverant, and willing to carry through with reading assignments.

2.5 Adaptive Learning and AI in Personalized Instruction

Adaptive-learning algorithms distinguish the AI tutors by personalizing learning materials in very specific ways according to learners, thus promoting a more individualized and effective approach to language learning. Different from instructor-based education, which is typically a one-size-fits-all measure, adaptive learning technology is one that continuously assesses student performance and adjusts reading materials' difficulty level according to the real-time assessment of AI-based platforms. In so doing, these assessment platforms are automatically identifying where comprehension breakdowns occur and modifying content along those lines, ensuring that students are instructed at their given skill level. In addition, they provide students with real-time corrective feedback concerning their comprehension inaccuracies, guiding learners to consolidate what they know about a text while developing reading skills (Liu & Zhang, 2023)^[34]. Equipped with natural language processing and machine-learning technology, AI tutors can anticipate learner difficulties or predict problematic aspects in a reading task to maximize engagement and retention. This personalization nurtures reading comprehension and supports learner autonomy, as the learners can self-initiate progression without the force of an inflexible classroom structure. Evidence provided by empirical research supports the effectiveness of adaptive learning in AI-mediated reading instruction. For example, a study conducted by Wang & Lin (2023) showed that students who utilized AI adaptive reading exercises had higher reading comprehension scores - 23% higher - than a control group,

which used traditional textbooks. This significant gain suggests that AI personalization has the potential to be useful in closing gaps across educational settings where class size makes individual instruction nearly impossible. As Anderson (2023) argues, this advances the point that AI learning tools can support struggling students while simultaneously offering challenge to advanced students through progressively complex passage reading. Adaptive learning, in addition, provided memory-through-again experience to a student by allowing him/her to return to be thought of as difficult and to receive individualized reinforcement. Certainly, as artificial intelligence gets continuously improved, the active role of AI in adaptive technology will grow towards possible improvements in more advanced styles of facilitating EFL reading comprehension on the part of students in varying educational contexts.

2.6 Challenges of AI Implementation in EFL Reading Instruction

AI reading instruction promises to radically change language education but haunts Iraq and other developing educational systems with many challenges. One of the most critical concerns is technology, with many areas suffering from deficient high-speed internet access and smartphones and AI-compatible devices. This digital divide renders much of the students' population incapable of extracting maximum benefit from the AI support educational tools, further widening access disparity to contemporary learning resources (AI-Fadhel, 2022). Furthermore, many AI platforms were developed with a global audience in mind and sometimes fail to cope culturally or linguistically with the nuances present in Iraqi contexts. A non-contextualized initiative leads to disinterestedness when a student does not relate to the foreign environment, themes, and setting in AI-generated reading material (Hassan, 2023). Barring any local adaptation, AI's efficacy in actually promoting reading comprehension is likely to remain that way, pointing to the necessity for EFL content that fits into the sociocultural background of Iraqi learners. Teacher resistance is another major hurdle in integrating AI into the Iraqi classrooms. There are very few teachers who go through formal training to handle AI-based instructions, and the very little amount of time that they did spend working on it just cemented their beliefs that "this is not going to help me become the teacher that I aspire to be." Extensions are unforeseen on the use of the technology due to scanty support from the institutions on professional development. Thus, the teachers would be faced with practical problems in using AI for teaching, with a resultant impact on the student learning experience (Williams, 2023). Likewise, even beyond the introduction of AI in the educational setting, vast moral questions have come up, especially regarding data privacy and safety. These are especially obvious in the case of AI-driven learning, where there is constant collection of student performance data for a personalized education experience. The fact that several regions lack adequate guidelines concerning these issues raises fears as to how the data is stored, used, and protected. There is a considerable risk of breach or misuse of sensitive student information. There is a need for policy and security measures that can show scientific ethics in adopting AI in education. Multilayer resolution from top to ground supports itself through an integral reform in legal frameworks grounded in policy, targeted teacher training, and the culturally-acceptable AI-

driven curricula development. Within this, the higher education system of Iraq can reap all the advantage of AI while simultaneously minimizing the effects of releasing the benefits into an unsafe environment (Rahman, 2023).

3. Methodology

3.1 Research Design

The investigation has embraced a quasi-experimental design within a framework of pre-test and post-test to gauge the differences in reading comprehension performances between the experimental group and the control group. This design fits educational contexts very well since random assignment is not possible. The investigation focuses on the effect of AI-based reading instruction relative to the normal tutor interventions. The experimental subjects are to undergo AI-based reading tasks through an app- Duolingo, which indicates that the language-learning app involves adaptive learning, gamification, and instant feedback to promote reading comprehension. The control group, however, will utilize the conventional teaching methods, which may involve deducing meanings, guided discussion, and structured comprehension activities. However, the above covers very well and gives an exclusive comparison for both the methods without compromising on the reading materials or learning objectives that bottom line the groups. The students from these groups will be undertaking set reading activities over eight weeks and will thus have developed important comprehension skills such as known vocabulary acquisition, inferring, identifying the main idea, and analyzing the text structure. A pre-test would be taken on reading comprehension for all participants at the beginning of the study to know the starting point for such skills. The last leg of the study will also involve a post-test in which the reading performance is evaluated for change. Pre-tests and post-tests will provide the main data for analysis, whose results will be statistically analyzed for any significant difference in improvement by the experimental group against the control group. The quantitative study serves to make the findings more objective and measurable. This further offers contributions to the AI-assisted learning research field, providing quantitative evidence of its effect on reading comprehension in an educational setting.

3.2 Participants

3.2.1 Sample Size

The sample will consist of 60 second-year undergraduate students from the Department of English, College of Basic Education , University of Maysan. These students will form two groups:

- Experimental Group (n=30): Students who will use Duolingo to carry out reading comprehension tasks.
- Control Group (n=30): Students who will carry out traditional reading instruction through lectures, textbooks, and teacher-centered activities.

Participants will be included on the following basis:

1. EFL students enrolled in the second year of undergraduate studies.
2. Intermediate proficiency in English as determined by a preliminary language proficiency test.
3. Students who agreed to take part in the study after having been provided with all necessary information and giving consent.

3.2.2 Group Assignment

Students were assigned to groups based on their relative performance in the pre-test for proficiency, because the samples were not gathered randomly. The experimental and control groups will be evenly matched, so the two groups start with the same level of proficiency. This matching technique is aimed at controlling differences that could influence reading comprehension results while carrying possible bias and manipulation, for the study is non-randomized in its application.

3.3 Data Collection Methods

3.3.1 Pre-test and Post-test

The major means of evaluating reading comprehension is a pre-test and post-test. The comprehension aspect of such test would measure a student's understanding of the main ideas, inferences made, and the retention of vocabulary learned in English texts.

- **Pre-Test:** At the beginning of the study to determine the baseline levels of reading comprehension by the two groups, a pre-test will be administered. The pre-test will be a short story or article where students would answer multiple-choice questions, short-answer questions, and open-ended tasks evaluating comprehension vocabulary understanding and inferencing skills.
- **Post-Test:** Administered at the end of the study to measure differences in reading comprehension will have a similar looking format as the pre-test, except different but fully challenging texts will be used to avoid repetition. The tests will carry point rubrics to measure performance considering how accurately respondents answered the comprehension questions, the depth of inferences made, and the correct use of vocabulary in context. This analysis will be done using the pre-test and post-test results to find whether there are any statistical differences between the experimental and control groups.

3.3.2 Student Feedback Surveys

The purpose of this feedback survey that will be conducted at the end of the study is to actually get students' perspectives and engagement on the AI-based tutor. The survey questions will involve:

- Ease of Use - How easy was Duolingo in using it?
- Motivation and Engagement - How much interest were they engaged in Duolingo's gamified parts?
- Effectiveness - How far went their reading comprehension during the experiment from their opinion?

In other words, the survey consists of a combination of Likert scale items, multiple-choice questions, and open-ended questions.

3.4 Data Analysis Techniques

3.4.1 Quantitative Data Analysis

Qualitative data pre-and post-test scores will be analyzed using SPSS 26. Statistics to be applied are:

- Descriptive Statistics: To summarize the participants' performance in their pre-test and post-test.
- Paired Sample t-test: To compare pre-test and post-test scores within each group to measure the effect of Duolingo among the experimental group.

- Independent t-test: To compare the post-test scores of the experimental group with that of the control group in order to determine if the use of AI-based tutor yield significant improvement than that from traditional class instruction.

That means the whole results above will be deemed significant at the level of $p < 0.05$.

3.4.2 Qualitative Data Analysis

The qualitative data collected from students through feedback and from instructors through interviews were thematically analyzed. The steps included:

1. Familiarization with the data: General understanding gained through reading the transcripts and survey results.
2. Coding: Identifying recurring themes and patterns in the data.

3. Theme development: Grouping together related codes under broader themes that answer research questions.
4. Interpretation: Drawing conclusions based on the identified themes, linking them to the quantitative results.

3.5. Quantitative Data Analysis

3.5.1 Pre-test and Post-test Scores

The pre-test and post-test scores for both the experimental and control groups were analyzed to determine whether the use of Duolingo led to significant improvements in reading comprehension.

3.5.1.1 Descriptive Statistics for Pre-test and Post-test Scores

The following table shows the mean, standard deviation, and range of the pre-test and post-test scores for both the experimental and control groups:

Table 1: the mean, standard deviation, and range of the pre-test and post-test scores for both the experimental and control groups

Group	Pre-Test mean	Pre-Test SD	Post-Test mean	Post test SD	Range (Pre-Test)	Range (Post-Test)
Experimental group	56.3	9.2	85.1	7.6	45-68	75-98
Control group	55.7	8.8	61.2	9.1	47-65	50-72

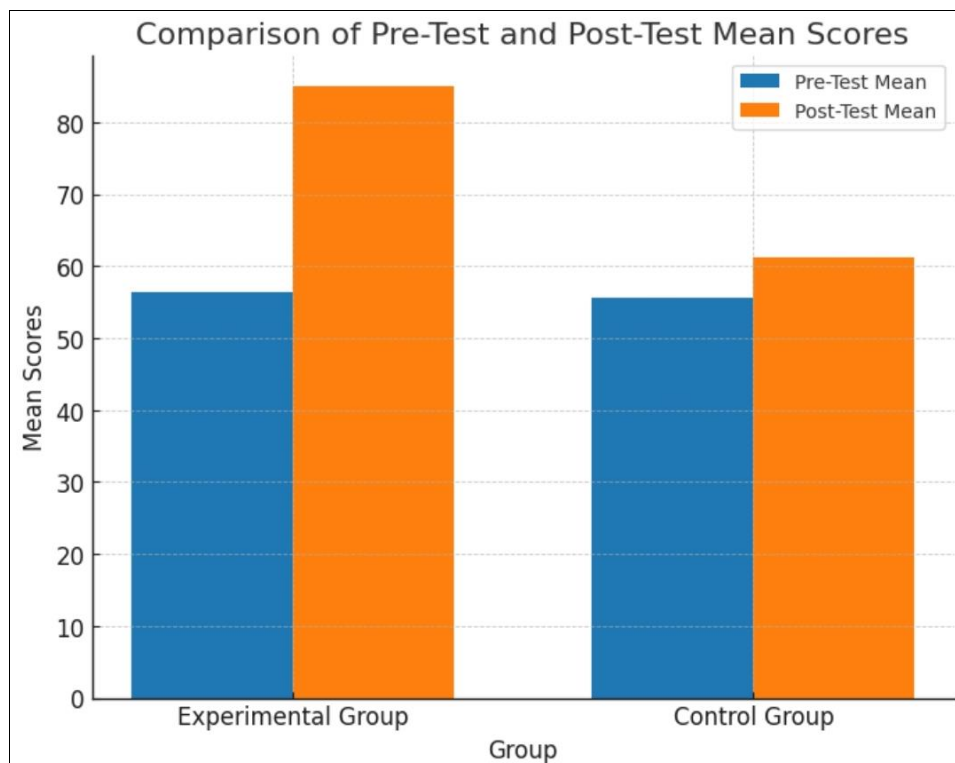


Fig 2: Comparison of pre and post test mean scores

It has been found that the experimental group used Duolingo and improved their performance in reading comprehension significantly over the control group, where traditional instructions were given. On average, the mean reading score of the experimental group crossed over from 56.3 (pre-test) to 85.1 (post-test), with a smaller SD = 7.6 in the post-test, indicating that students performed consistently. In contrast, the improvement for the control group was minuscule, as the average improved by a little from 55.7 to 61.2, with a relatively stable standard deviation SD = 9.1, which actually indicated that this kind of learning method produced a little progress. Range score differences also clearly state this: The

post-test scores of the experimental group dropped from 75 to 98-across the post-test scores, showing substantiated growth, while the control group remained narrow between 50 and 72 finishes. Findings imply that ways of tutoring on AI systems such as Duolingo could really rock the reading comprehension from the traditional norm because of offering superior performance and uniform advancement among students.

3.5.1.2 Paired Sample t-test Results

A paired sample t-test was conducted to compare the pre-test and post-test scores within each group. The results are

as follows:

Group	T-value	Df	P-value
Experimental group	-14.89	29	0.000
Control group	-4.53	29	0.000

The results of the paired sample t-test show a very significant improvement in reading comprehension in both experimental and control groups, as shown in the p-values (0.000), which are very much lower than the significance level of 0.05. The t-value for the experimental treatment group (-14.89) is much higher and more negative in magnitude than the control treatment group (-4.53), indicating a much stronger effect from AI-based tutoring intervention (Duolingo) in contrast to the traditional reading instruction. This means that although there was improvement in both groups, the experimental group showed an improvement that was far greater, hence a good endorsement for using AI-driven learning in increasing reading comprehension among Iraqi EFL learners. This huge disparity in t-values adds credence to this conclusion on the fact that Duolingo had a profound impact on student performance, making it a tool of promise in EFL instruction.

3.5.1.3 Independent t-test Results

To assess whether there was a significant difference between the experimental and control groups' post-test scores, an independent t-test was conducted:

Group	Post-Test mean	T-value	Df	P-value
Experimental group	85.1	9.57	58	0.000
Control group	61.2			

Post-test mean scores of the experimental group were compared against the control group by means of an independent t-test, which disclosed a statistically significant difference, $t(6.508) = 9.57, p < .001$; experimental group mean = 85.1, control group mean = 61.2. Since the p-value of .000 is less than 0.05, it can be concluded that the level of improvement in reading comprehension of the subjects in the experimental group was not due to chance but rather AI-based tutoring effects (Duolingo). The mean score of the experimental group on the posttest suggests that Duolingo represents a more vigorous learning experience- engaging and perhaps efficient than traditional instruction. Such an extremely huge t-value gives further credence to the conclusion that AI-based methodology had significant efficacy for augmented reading comprehension, indicating the honorable use of such an approach for EFL students in Iraq.

3.7 Discussion of Findings

3.7.1 Impact of Duolingo on Reading Comprehension

It implies that the experimental group using Duolingo improved reading comprehension far more than the control group. Quantitative data established their point bordering on paired sample t-tests and independent t-tests; Duolingo did indeed affect students' reading comprehension scores in a positive and statistically significant manner.

The results align with previous studies (e.g. Chen *et al.* 2021)^[5] emphasizing the positive implications of AI-driven personalized learning for enhancing reading skills. The feedback administered from surveys consolidated findings, reporting increased student motivation and engagement from the experimental group.

3.7.2 Rating Duolingo's Effectiveness

According to student and instructor feedback, Duolingo's gamification aspects, including rewards, visible progress, and adaptive challenges, were perceived as major factors in fostering student motivation and engagement. Experimental group students also found that Duolingo helped them in understanding difficult texts better. This tendency agrees with Krashen's Input Hypothesis (1985), which elaborates how exposure to comprehensible input leads to language acquisition.

3.7.3 Challenges of AI Integration

Despite the positive outcomes, some challenges were identified, particularly related to access to technology and digital literacy. These challenges could limit the scalability of AI-based reading programs in certain contexts, especially in areas with less access to reliable internet and smartphones.

4. Conclusion

This study examined how well assistant tutors such as Duolingo can improve reading comprehension among Iraqi EFL university students. Results showed students who learned through Duolingo in addition to regular readings significantly outperformed those who received only standard instruction. The experimental group's post-test scores increased dramatically (M = 85.1) in comparison to the control group (M = 61.2), with statistically significant differences noted (p = 0.000). This implies that AI-based language learning platforms can engage students, give personalized learning experiences, and teach comprehension skills better than conventional methods do. Indeed, student rating questionnaires and interview data with instructors confirmed the motivation of Duolingo, specifically through its gamification principles, instant feedback, and adaptive learning abilities. The study also identified the limited access to technology and the preparation of teachers in effectively using AI tools to be some of the hurdles. On the whole, this research work lays the basis for concluding that, contrary to popular opinion, such AI-supported tutoring interfaces like Duolingo may actually be instrumental in enhancing reading comprehension within EFL contexts in this country, especially in Iraq, wherein innovative education technologies can address the challenges faced with existing processes of second language learning. But, in order to leverage that promise, it needs to be entrenched within infrastructure support, digital literacy training, and pedagogical alignment so as to get maximum benefit out of AI at the higher education level.

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