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AI-Mediated Content-Based Language Learning: Delving into EFL Learners' Perspectives

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ABSTRACT

This paper focused on an innovative approach to second language learning through using AI-mediated content-based methodologies. Through a structured six-week course, this study integrated technology-driven tools to help learners improve the quality of their language learning process in real-word contexts. At the end of the course, learners, who were EFL learners at the intermediate level of language proficiency, were interviewed and were invited to share their perspectives on the way AI-mediated content-based language learning process could improve their writing skill and vocabulary knowledge. It should be mentioned that the AI-powered tools used in the study involved chatbots and Wordtune. The generated data were analyzed through inductive thematic analysis. With regard to the participants' vocabulary knowledge, the two themes were extracted: the use of multimedia materials and the meaningful presentation of vocabulary items. Furthermore, addressing the enhancement of their writing skill, the participating learners underscored the value of the collaborative process of writing offered by AI-powered tools and referred to the importance of receiving constructive feedback. In general, findings revealed that AI-powered educational tools foster EFL learners' motivation for engaging in writing practices strengthen their self-efficacy, and provide immediate and appropriate feedback.

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1. Introduction

In recent years, Artificial intelligence (AI) has revolutionized various educational fields and is growingly implemented in a wide range of academic topics including language learning (Etaat, 2024). Considering AI as a sub-field of Computer-Assisted Language Learning (CALL), Polrivcakova (2019) asserted that the integration of AI-powered tools and facilities into the English language classrooms increase the chance of flexibility, inclusivity, and the process of personalized learning. Likewise, AlTwijri and Alghizzi (2024) talked about the role of AI in English language classrooms, arguing that the use of AI-powered tools in English language education creates an opportunity for language teachers to help their learners improve their motivation for learning, mitigate their anxiety, and form positive attitudes towards using information and communication technologies in English language education. They maintained that

It is evident that these AI technologies have the potential to positively impact various aspects of EFL learning, such as improving motivation, engagement, and attitudes and reducing anxiety in EFL higher education. In addition to enhancing learners' affective factors, the use of AI tools has led to improvements in EFL learning performance. (p. 9)

One of the fields to be examined in language education is related to the incorporation of AI-mediated content-based learning into language classes. In general, AI-mediated content-based language learning offers an immersive contextual approach to language acquisition particularly in English as a foreign language learning (EFL) context. EFL learners often use English only in particular circumstances and for specific goals (Kirkpatrick, 2014). Moreover, the learning contents that are generated by AI-powered tools dynamically alter and adapt contents based on the level of language learners (Diwan et al., 2023).

Therefore, due to the limited role of English in the environment, the learning path is even harder, and numerous challenges are encountered. Learning a language is more effective when this process is contextualized within specific subject matter, enabling learners to acquire vocabulary items and understand how these vocabulary items apply to real-world situations. The Integration of intelligent teaching approaches serves some goals such as providing instructional materials and assignments that best fit the students' needs (Aldeman et al., 2021). AI-assisted mediums have been integrated into educational curriculum to enhance learning such as conveying specific content, assigning tasks, and mediating learning through providing engaging and learner-active

environments. Accordingly, according to Solhaug (2009), having access to computers leads to classroom discussions, critical reflections about the discussed lessons, and the improvement of the critical thinking and innovation of ideas.

The present study was built on existing research in technology-mediated language learning, but it specifically aimed at delving into EFL learners' perspectives on the way AI-mediated content-based language learning helped them improve their writing skill and vocabulary knowledge. As the previous studies mainly addressed the improvement of English language skills or the enhancement of the positive psychological attributes (Alharbi, 2023; Chen, 2024; Fathi et al., 2024; Kang, 2022; Qiao & Zhao, 2023; Sari, 2023; Wang & Moorhouse, 2024), there is a strong need to explore learners' own perspectives on the use of AI-generated tools in English language classes. Accordingly, this paper outlines a six-week English language course structured around six thematic topics based on the course book. In the AI-mediated instructions, AI tools were integrated throughout the course to assist the learners with interactive learning, personalized feedback and content-driven information. In the present study, I sought to examine the way offering content-based instructions through Wordtune and chatbots could shape language learners' writing skills and vocabulary knowledge. It should be added that the study specifically sought to explore the learners' own experiences and perspectives to create a space for hearing their voice. Chatbots are agents which are used in language classes for conversational interactions by providing the necessary input. According to Fryer et al. (2017), "it is widely acknowledged that massive amounts of comprehensible language and practice are essential for meaningful language learning to take place" (p. 462). Furthermore, Wordtune is an AI-powered tool used in language classes to help learners in the process of writing. Despite the majority of writing-based AI-powered tools, Wordtune goes beyond the process of language revision and helps language learners think about their writing product. Several scholars in language teaching confirmed the positive effect of using Wordtune in language classes (Mahmud, 2023; Zhao, 2023). That is, the present study aimed at answering the following research questions:

1. What are language learners' perspectives on the way AI-mediated instruction influence their vocabulary knowledge?
2. What are language learners' perspectives on the way AI-mediated instruction influence their writing skill?

2. Literature Review

This study complements the ongoing research in the application of AI in education (AIEd), particularly AI-mediated content-based language learning methods. Background studies revealed that the integration of intelligent technology into education has been applied with several purposes in mind: to modernize education (Xia et al., 2022), to boost academic performance by increasing students' cognitive engagement, to reduce educational inequalities by helping under-privileged students (Boninger et al., 2020), and to improve efficacy in learning, teaching, assessment and administration (Gonzalez-Calatayud et al., 2021).

Based on the review study carried out by Chiu et al. (2023), research in AIEd domain is still in its exploratory stage, and studies have not yet shown exactly that how AI affects the process of learning and the attainment of students' outcomes, which is a gap the present study was designed to partially fill. Additionally, the scope of AIEd is too scattered and most of the research is about engineering aspects like creating new algorithms and developing machine learning techniques, so that the impact of AI on education has remained unclear (Holmes et al., 2021). In other words, it is not sufficient to argue that merely AI should be utilized in an educational context. It needs to be investigated that what type of AI technology is needed, how it should be implemented, and what the possible incentives and challenges for learners and teachers are (Holmes et al., 2021).

Content-based instruction is an approach that uses subject matter content to teach language skills rather than focusing on language structures. It emphasizes learning language through engagement with meaningful content. Implementing inquiry-based learning and constructivist approaches based on the conceptual change theory enables students to progress according to their own learning levels (Hurwitz, 1999). Communicative approaches to language teaching aligns with content-based methods, where the learners acquire vocabulary and grammar in context. This provides a deeper understanding of language use along with deeper cognitive processing. According to Wegerif (2004), implementing AI-mediated language learning tools support the constructivist learning theory as well as activity theory, where the students should take the control of their own learning and develop their knowledge by constructing dialogues and interactions. Activity theory supports dynamic interactions between content and learners, focuses on mediating learning efficiently, and shapes cognitive developments through tools such as AI-assisted mediums.

In other words, AI-mediated learning environments provide an opportunity for the learners to follow adaptive learning paths, interactive simulations, personalized learning and automated feedback based on their needs. They offer real-time assessments and allow learners to engage with materials that are tailored to their individual progress. Ziqi et al. (2024) believed that the corrective feedback automatically offered by AI-powered tools increases the accuracy in learners' performance as they become aware of their problems and can correct them. Several scholars referred to the role of AI in strengthening affective traits in language learners and creating the chance of self-regulated learning (Aladini et al., 2025; Chang & Sun, 2024; Wang et al., 2024; Xu et al., 2025).

In addition, as Ouyang and Jiao (2021) mention, AI-supported paradigm acts as a partner collaborating with the learners to enhance skills like critical thinking and problem solving in a collaborative learning environment. Moreover, the AI-empowered paradigm enables the learners to take control of their own learning in a more self-directed way, explore the existing possibilities, and pursue their goals. In a systematic review by Chiu et al. (2023), the integration of AI into Education (AIEd) encompasses four categories: learning, teaching, assessment and administration with some aims and outcomes as follows:

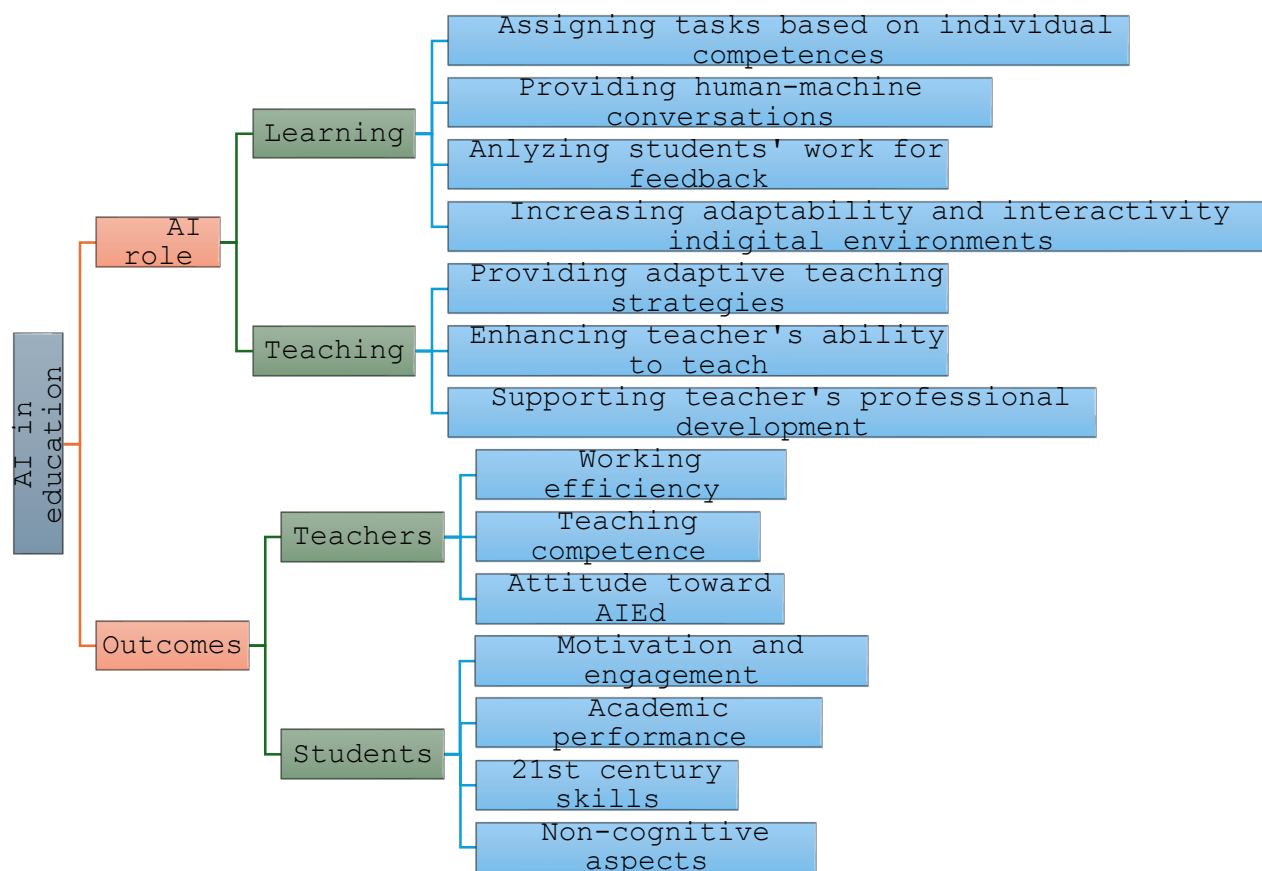


Figure 1. The Roles and Outcomes of AI in Education

According to Chiu et al. (2023), one of the main outcomes of the AI implementation in learning process is improving motivation and engagement in learners, and one of its roles is to provide interactive and adaptable environment. A common use of AI is implementing AI-assisted software for the development of different skills in language classroom. Educators are acquainted with a variety of computer software tools and use them in the process of teaching and learning, such as Ms.word, Grammarly, Wiki, Wordtune, etc. (Kuteeva, 2011; Yunus et al., 2012). In addition, Chatbots are one of the emerging types of AI used in language learning process having several potentials more or less: providing necessary interventions (Lin & Chang, 2020), creating group activities for developing learning skills (Xu et al., 2021), and presenting relevant content (Ruan et al., 2019).

This study addressed the values of content-based learning by targeting EFL learners through the implementation of engaging AI-driven approaches. By considering language enhancement through the integration of AI- assisted content into the classroom lesson plans, the project aimed to investigate how such an approach in the learning environment contributes to more efficient language learning particularly in terms of vocabulary enhancement and writing skill progress. Indeed, the learners' perspectives on the way AI-powered content-based learning affected their writing and vocabulary acquisition were explored. In general, the study sought to contribute to the application of the innovative approaches, which provide engaging language learning environments for the learners, empowering them to become active participants and take the control of their learning.

3. Method

3.1. Participants

In this study, I aimed to provide a comprehensive view of the role of AI-based educational tools in fostering the learner's language learning process by delving into their own perspectives and experiences. In addition, considering learners' voice through interviews offers valuable insights into the effectiveness of the method and highlights areas for necessary improvements. In this study, the participants were intermediate participants (n=10).

3.2. Methods of Data Generation

3.2.1. Semi-structured Interviews

To generate the data regarding the participating views on the way AI-powered content-based learning shaped their writing skill and vocabulary acquisition, semi-structured interviews were carried out. Each interview lasted for about 40 minutes. The interviews were recorded and transcribed. Informant consent was obtained from each participating learners. The participants were permitted to use pseudonyms to observe the matter of confidentiality. Indeed, "semi - structured interviews are superbly suited for a number of valuable tasks, particularly when more than a few of the open - ended questions require follow - up queries" (Adams, 2015, p. 365). Some of the interview questions are presented below:

- How was your experience of receiving teaching materials around some predetermined themes through Wordtune?
- How was your experience of receiving teaching materials around some predetermined themes through chatbots?
- How could receiving teaching materials around some predetermined themes through Wordtune shape your vocabulary knowledge?
- How could receiving teaching materials around some predetermined themes through chatbots affect your vocabulary knowledge?
- How could receiving teaching materials around some predetermined themes through Wordtune affect your vocabulary knowledge?
- How could receiving teaching materials around some predetermined themes through chatbots affect your writing skills?
- How could receiving teaching materials around some predetermined themes through Wordtune affect your writing skills?

3.2.2. Wordtune

While many AI-powered tools used for improving the writing skills, like Grammarly, focus on the revision of the written text with regard to the grammatical problems or spell-checking, Zhao et al. (2025) indicated that Wordtune creates the rewrite options as it helps the users to change the sentence structure or vocabulary items. It involves two versions: the free version and the premium version. As Zhao mentioned, “however, like other AI-powered digital tools, Wordtune also has limitations, including some unexplained error messages and mistakes it makes in rewriting sentences” (p. 3). Several scholars explored and confirmed the effectiveness of Wordtune in improving the writing skills of language learners (Fitria, 2024; Rad et al., 2024; Zhao et al., 2024).

3.2.3. Bots

Chatbots play highly important roles in the process of language learning, offering the possibility of effective communications between humans and bots (Han & Ko, 2023; Huang et al., 2022; Jeon et al., 2023). As Wiboolyasarini et al. (2024) indicated, the versatility of chatbots “allows integration into various platforms such as websites or messaging applications, offering automated

assistance, answering queries, performing tasks, and engaging in meaningful conversations” (p. 32). The implementation of chatbots in language classes seems to be effective as they help learners overcome the existing problems they face in regular classes and foster their ability to communicate with bots.

3.3. Procedure

To carry out this study, a course was designed to provide a comprehensive learning experience divided into six weekly modules, each centered around a thematic topic. It should be added that each module consisted of interactive AI-mediated activities, language learning tasks, and assessments, AI-mediated tools, used in the present study, along with classroom activities and objectives were as follows:

Table 1. Lesson Plans’ Mediums: AI-based Tools, Activities, and Objectives

AI-enhanced tools	Activities	Objectives
Image-To-Text (ITS)	Converting image into text	Improving vocabulary and increasing exposure to specific content
Chatbots (GPT4)	Chatbot-based interactions, conversations about specific topics, ask-and-answer role plays	Focusing on increasing vocabulary and writing skills; providing more information about the topic; increasing accuracy and fluency.
Writing Applications (Wordtune)	AI-based collaborative writings	Focusing on automatic corrective feedback (ACF); enhancing features of writing such as grammar, mechanics, organization, accuracy, fluency, and lexis.
Writing Evaluators (Instatext)	Writing assessments and gaining feedback	Giving written ACF; offering alternative suggestions based on the context; expanding vocabulary; and doing error correction.

Examples of AI-generated content and AI-generated image are presented below.

Uploaded image to ChatGPT:**AI- generated content for the image above:**

This image shows the harmful effects of pollution and climate change. In the front, we can see dry, cracked ground. This shows that the land has no water, which can happen when the weather is too hot or dry for a long time.

In the background, there are many factories with tall chimneys releasing thick, black smoke into the air. The orange sky makes the scene look hot and unhealthy. The smoke contains harmful gases that pollute the air and make the planet warmer.

This image is a warning about how human activities, like factories and pollution, are damaging the environment. It shows that if we do not take care of the planet, we may face more droughts, dirty air, and a hotter world. It reminds us that we need to protect nature by reducing pollution and using cleaner energy.

Uploaded Text to ChatGPT:

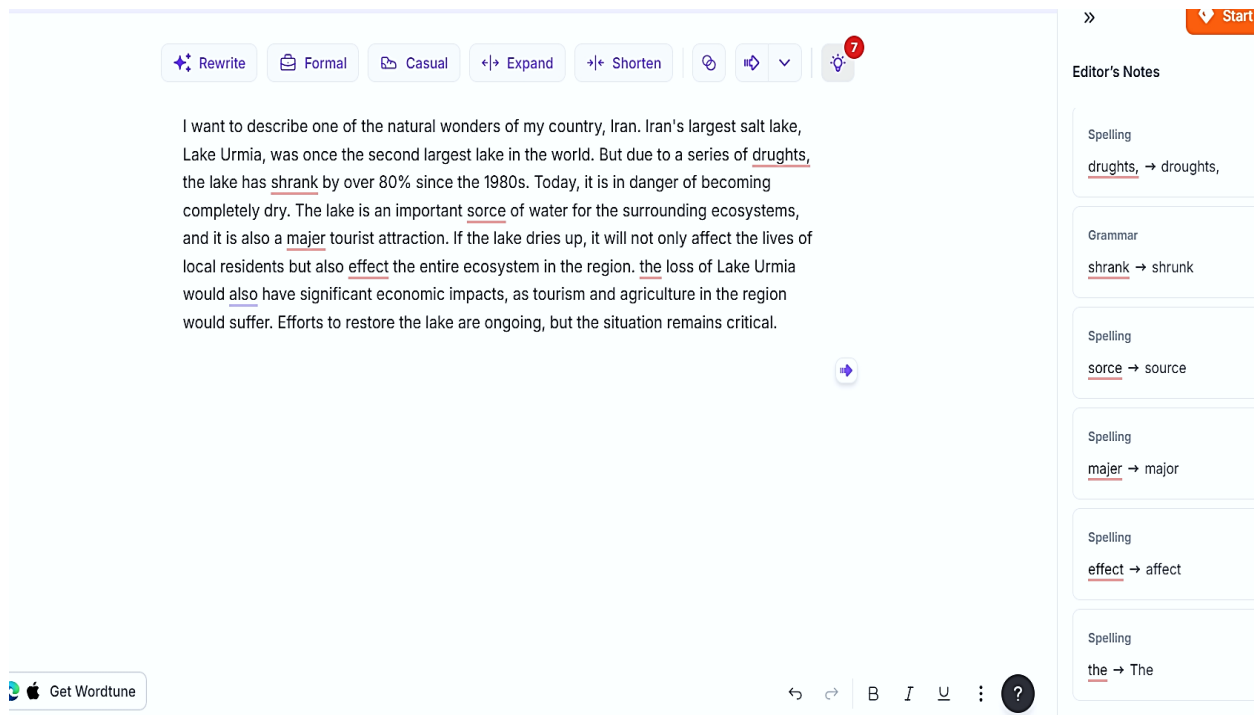
The environment is everything for us and it is very important for surviving. However, it is forgotten by humans, and it is facing many problems because of global warming. It means that the temperature of the earth is rising. This happens because of greenhouse gas emissions like carbon dioxide and methane. These gases trap heat in the atmosphere and make the planet hotter.

One major cause of global warming is pollution from cars, factories, and power plants. When we burn fossil fuels (coal, oil, and gas), it releases CO₂ into the air. Deforestation also makes global warming worse. When trees are cut down, there are fewer plants to absorb CO₂. The effects of global warming are dangerous. Ice caps are melting, causing sea levels to rise. This can lead to flooding in some areas. Hotter temperatures also cause more droughts and wildfires. In some regions, weather patterns are changing, making storms stronger and more frequent. To fight global warming, we need to make changes. People can use renewable energy like solar and wind power instead of fossil fuels. We can also plant more trees and reduce waste. Small actions, like recycling and using less electricity, can help protect the environment.

AI-generated image for the text above:



AI-based collaborative writing through “*Wordtune*”, its overall environment, its writing features, and the provided automatic corrective feedback are presented as follows:



As seen, it has some features such as formality selection, expansion or shortening texts, prediction of the next sentence based on the context, and error corrections. After participating in the above-mentioned project, the participating learners were interviewed to share their experiences of the way the AI-mediated content-based instruction could improve their writing skill and vocabulary knowledge. Each interview lasted for about 30 minutes and was transcribed. The transcripts were analyzed using inductive thematic analysis. That is, first I immersed in the generated data to highlight the meaningful patterns to be coded using concepts. At the second stage, I re-examined the initial codes based on their similarities and differences and replaced them by larger categories called themes.

4. Findings

With regard to the improvement of their vocabulary knowledge, the participating learners largely talked about the use of multimedia materials and the way new and difficult vocabulary items could be learned through a larger context. That is, two main themes were identified: the use of multimedia materials and the meaningful presentation of vocabulary item. Considering the use of the multimedia materials, learners talked about the role of images, hyperlinks, and colors that helped them learn the core meaning of new vocabulary items and be motivated enough to progress.

Mary, as one of the participating learners talked about the role of images and colors as follows:

I know learning new words in English is a challenging process. However, learning such words through meaningful themes and contents full of color and real objects made me understand the meaning of words. Pictures and images full of beautiful colors helped me learn more and more. I like this activity when our teacher asked us to convert images into text.

In a similar vein, Sam referred to the process of converting images into text. He explained: *I could learn words, especially the new and sophisticated words, as I could see the relation between the image and text. Images are the real representation of words. Furthermore, they made the process of learning interesting and made me continue.*

Likewise, Sara, as another participating learner explained that:

In regular classes, we just focus on words. Sometimes, in books we face pictures, simple pictures that are not very attractive. But here, we eagerly wanted to convert images into texts. We learned many words through the new atmosphere full of images and colors.

As the extracts reveal, the multimedia materials provided a new atmosphere for language learners to learn and increase their vocabulary knowledge. They believed that the use of colors, pictures, and images was an attractive opportunity for creating a connection between words and the real objects, fostering their understanding and recognition of words. In general, the majority of learners talked about the meaningful presentation of words. They referred to the implicit learning process, where the words are given in a context. That is, they focused on the value of the context and the relevant content. Sam, in his semi-structured interview explicated that:

When we are enforced to memorize a list of new words to pass a course, we don't learn words because we forget everything immediately after our class or after the test and examinations that destroy everything.

He added that:

When contents are interesting and attract me as a young learner, I will be motivated to learn everything. Here, words become very important and I do my best to learn the meaning of each challenging words to understand the whole meaning of the text. So, I think contents are very valuable.

Indeed, Sam argued that the EFL learners' knowledge of the vocabulary items will be improved when they are given this opportunity to learn new vocabulary items within the relevant contents. Sam believed that the increasing exposure to interesting contents through this AI-mediated content-based learning process could help him, as an EFL learner, foster his vocabulary knowledge. With regard to the improvement of their writing skill, the participating learners mostly talked about the collaborative process of writing offered by AI-powered tools and referred to the value of receiving effective feedback. With regard to the collaborate process of writing, they explained that the AI-powered tools enabled them to re-think and change the way they wanted to write about a topic. Anita, as one of the participating learners explained that:

We were permitted to learn through contents offered by AI-tools. You know, I express my view about Wordtune. It seems that Wordtune is a good interlocutor and receiver of my message. Wordtune gave me new options for thinking. It was a collaborative process. We though with each other to find the best options.

However, in his semi-structured interview, Sam talked about the value of the effective feedback. He indicated that:

In regular classes, in many cases, we face problems, because we don't receive the correct feedback. But, here, though this activity, we received feedback addressing various aspects of our writing skill. It was highly meaningful.

5. Discussion

The main objective of the present study was to investigate the role of AI-generated content-based methodology in enhancing EFL learners' language learning. The results suggest improvements in overall language learning particularly vocabulary and writing skills, which were the main focus of the study. This finding confirms that the AI-mediated content-based approach provides an interactive and personalized learning environment. Learners benefit from thematic approach through which they are exposed to diverse vocabulary and contextual uses of language which results in more effective learning. Indeed, the implementation of AI-powered educational tools to create the possibility of interactive and collaborate ICT-based learning not only improves the possibility of learning the English language but also enhances knowledge of cultural contexts (Mageira et al., 2022). With regard to the enhancement of their vocabulary knowledge, the

participating learners acknowledged that receiving content-based instructions through AI-powered tools created an atmosphere of relevant, contextualized, and meaningful language learning.

The positive and significant interaction indicated that the learners learned at a faster rate than what they experienced previously in the regular classes. Furthermore, the feedback quality was improved. This point was in line with the findings of the previous studies highlighting the role of AI in providing appropriate feedback (Guo et al., 2024, Teng, 2024; Yang et al., 2024). As Teng (2024) explicated, teachers can make use of AI-powered educational tools to increase their students' motivation for engaging in writing practices by fostering their confidence, improving their self-efficacy, offering immediate and appropriate feedback, and creating the chance of self-evaluation. Offering constructive feedback based on learners' response and level of language proficiency hints at the possibility of personalized learning. As Pokrivcakova (2019) stated, “applying AI in foreign language education provides learners with immediate and highly individualized support, which is a fundamental building stone for personalized learning as one of the ideal standards of contemporary pedagogy” (pp. 137-138).

6. Conclusion and Implications

The aim of this study was to evaluate the role and function of AI-generated content-based methods in strengthening EFL learners' language learning process. Based on the results, the participating learners benefited from AI-generated contents related to the specified themes, while there were some problems. The AI-generated content-based language learning methods demonstrate the potential of integrating AI tools into language learning environments. By contextualizing language learning within thematic topics learners are enabled to retain and apply language in meaningful contexts. Future research should explore expanded topics, incorporating more AI tools and evaluating long-term retention of language skills. In addition, this approach can be implemented in different settings with learners of higher or lower levels of language proficiency. Finally, the future studies may evaluate the use of AI tools for the development of other language skills, including reading, writing, and listening skills.

Bio-data

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