

Volume 3 | Issue 1 | 2023

http://langedutech.com



Teaching English in the Age of AI: Embracing ChatGPT to Optimize EFL Materials and Assessment

Osama Koraishi^a*

Suggested citation: Koraishi, O. (2023). Teaching English in the Age of AI: Embracing ChatGPT to Optimize EFL Materials and Assessment. *Language Education & Technology (LET Journal)*, 3(1), 55-72.

Info Abstract

Date submitted: 22/04/2023

Date accepted: 11/05/2023

Date published: 12/05/2023

Technology Review

The sudden spike of artificial intelligence (AI) technologies has had and continues to have a transformative impact on various domains, including education. The advent of AI-powered large language models [LLM], such as OpenAI's ChatGPT, will significantly enhance the way English as a foreign language (EFL) is taught and learned. This article explores the versatile applications of ChatGPT as a valuable tool in any EFL teacher's toolkit, specifically focusing on material development and assessment. The demand for effective EFL teaching and learning strategies has been steadily on the rise for years due to globalization and the widespread adoption of English as the lingua franca for international communication. Consequently, the integration of technology in language education has become crucial in addressing the diverse needs of EFL learners and teachers. ChatGPT, a cutting-edge LLM, holds considerable promise in revolutionizing EFL education, as it combines advanced natural language processing capabilities with a realistic instantaneous human-like interaction. This article aims to provide some potential benefits of utilizing ChatGPT in EFL education. First, we examine how ChatGPT can be employed in material development, streamlining the process of creating engaging and contextually relevant resources tailored to the needs of individual learners, as well as other more general uses. Second, we explore the role of ChatGPT in text assessment, highlighting the fact that, unlike humans, it has the potential of offering real-time, personalized feedback on learners' performance, thereby enhancing the overall learning experience. It is worth noting that this article as well as the applications suggested in it are based on the latest ChatGPT 4 and not the older ChatGPT 3.5.

Keywords: ChatGPT, Artificial Intelligence (AI), LLM, EFL, Artificial Intelligence in Education (AIEd), Natural Language Processing (NLP), Edtech, EFL Teaching, Material Development, Assessment, Personalization, Differentiation, SLA, CALL, E-Learning, Feedback, Pedagogy

Introduction

The use of AI and chatbots in education has a rich history, dating back to the early days of AI with systems like ELIZA (Weizenbaum, 1966) which was an early AI program that simulates text-based conversations with humans which usually mimicked being a psychotherapist; and SHRDLU which was designed to understand and process natural language while interacting with a virtual world of blocks,

^a Independent Researcher, Turkey; 0009-0008-1670-3436

^{*} Osama Koraishi. Independent Researcher, Turkey. e-mail adress: osama.koraishi@gmail.com

executing tasks and answering questions about the environment (Winograd, 1972). Over time, these systems have evolved, becoming more sophisticated and better suited for educational purposes (Kerly, Hall, & Bull, 2007; Latham, Crockett, McLean, & Edmonds, 2012). Even prominent educational institutions and organizations, such as Khan Academy and Educational Testing Service (ETS), have already implemented AI in their systems to improve learning outcomes and assessment processes (Khan Academy, 2023; Runyon et al., 2022).

Thus, the need for effective integration of such technology in EFL teaching and learning could be the answer to mitigate the burden of material design and help teachers with material development as well as other tasks with ease and efficiency. Technology integration in language education has become more prevalent than ever before (Chapelle, 2001; Kukulska-Hulme & Shield, 2008), and educators around the world need to keep up.

As the most recent and, debatably, the most innovative LLM, ChatGPT demonstrates the power of AI in language education, with its advanced natural language processing capabilities and humanoid interaction (Floridi & Chiriatti, 2020, MacNeil et al., 2022). The introduction of such technologies offers a unique opportunity to reimagine the role of AI in EFL education. This paper aims to investigate the potential applications of ChatGPT in two key areas at the teacher level: material development and assessment. By examining these areas, we hope to shed light on how ChatGPT can serve as a valuable tool in any EFL teacher's toolkit and contribute to the enhancement of EFL education.

However, the readers should consider the lack of empirical research regarding the use of ChatGPT in language education, particularly its effectiveness and quality of output. This gap is understandable considering the recent emergence of ChatGPT, this paper is written in hopes of adding to the literature on the capabilities of ChatGPT as an LLM and its relevance in the context of EFL education.

Streamlining Material Development

Immense pressure is put on the shoulder of EFL teachers all around the world by the many stakeholders when it comes to delivering effective instruction that caters to the diverse needs of their learners because of the ever-rising demand for proficient English speakers in our modern world. Consequently, while modern textbooks are amazing basic requirements for quality instruction, EFL educators are still faced with the daunting task of customizing and differentiating their instructional materials to accommodate varying learner backgrounds, proficiency levels, and learning styles. This significant burden often demands substantial time, effort and skill, impeding their capacity to focus on other critical aspects of language pedagogy.

That said, teachers have always been able to adapt to new technologies in order to become more efficient, so it is imperative to explore ChatGPT as a new avenue of support that can alleviate the strain on EFL teachers. The integration of such AI-driven tools can potentially empower EFL teachers to optimize their teaching effectiveness and better address the multifaceted needs of their learners (Rudolph et al., 2023).

Building on this premise, the subsequent sections of this article will delve into the various ways in which ChatGPT 4 can be employed to support EFL teachers in their material customization and differentiation efforts. By examining the practical applications of this AI-driven tool, we aim to provide at least a basic understanding of its potential in enhancing EFL teaching practices and facilitating more personalized learning experiences for students.

Text Generation and Manipulation

The first application to be explored involves its capacity to generate tailored text passages based on a specific topic that usually is relatable to or to the liking of the learner, linked to a designated Common European Framework of Reference for Languages (CEFR) proficiency level. This feature enables EFL teachers to create contextually relevant and level-appropriate reading materials that incorporate new

vocabulary seamlessly, making it easier to address the individual needs of learners as seen in Figure 1. Furthermore, ChatGPT can also be utilized to generate comprehension questions in relation to the generated text, facilitating a more comprehensive learning experience for students. In fact, it can even generate multiple types of questions just in case one type was not enough i.e. it can generate questions to target different aspects of the text such as vocabulary, comprehension and so on. Figure 1, found below, serves as an illustration of this usage.

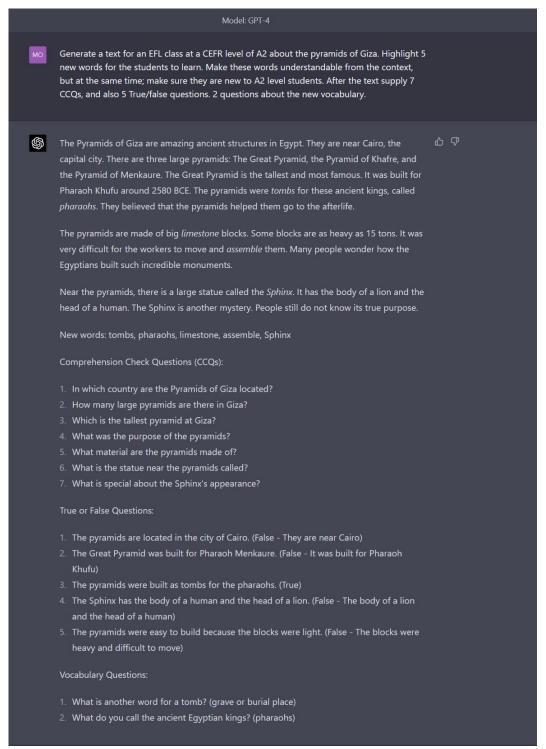


Figure 1. Generating theme-specific, level-specific texts

In addition to that, ChatGPT also allows for the effortless adaptation of that text, or any text for that matter, for use with a different CEFR proficiency level (Kuhail et al., 2022). By simply prompting it with different parameters or providing additional guidance to the AI, EFL teachers can efficiently repurpose the text to suit the needs of another class, thus maximizing the utility of the generated content. This flexibility in material adaptation offers incredible ease in streamlining the process of creating diverse resources. In Figure 2, we can see the same text seen in Figure 1 adapted to a different level.

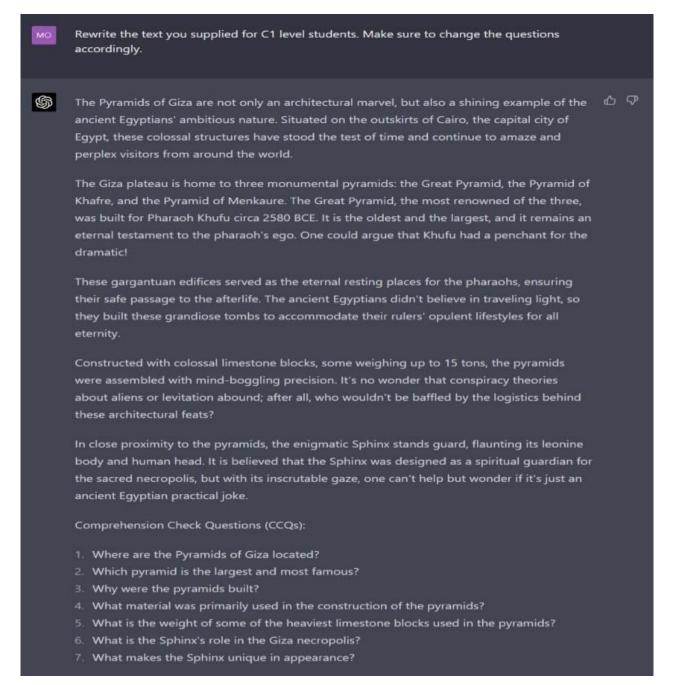


Figure 2. Repurposing texts to other levels

This solves the problem of finding interesting student-relevant text for the various learners the teacher might have in his/her class.

Vocabulary Integration and Manipulation

The randomness of vocabulary knowledge among EFL learners, though might be on-level, often results in distinct gaps in their lexical proficiency, necessitating an individualized focus on specific sets of target vocabulary or even sets that are more relevant to them in terms of profession or interest. For the longest time, addressing this issue required teachers to invest considerable time and effort in identifying appropriate strategies to incorporate these target words into the instructional materials, or even create new texts from scratch. However, with ChatGPT, EFL teachers can now streamline this process significantly as well. By designing the right prompt and providing the necessary parameters i.e. vocabulary set, educators can leverage the capabilities of AI and integrate numerous target vocabulary words into generated texts, even when dealing with extensive lists containing tens or hundreds of words. This innovative approach not only reduces the time and effort previously associated with material customization but also allows teachers to efficiently cater to the diverse vocabulary needs of their students, ultimately enhancing the overall learning experience. Figure 3 shows an example of such a case.

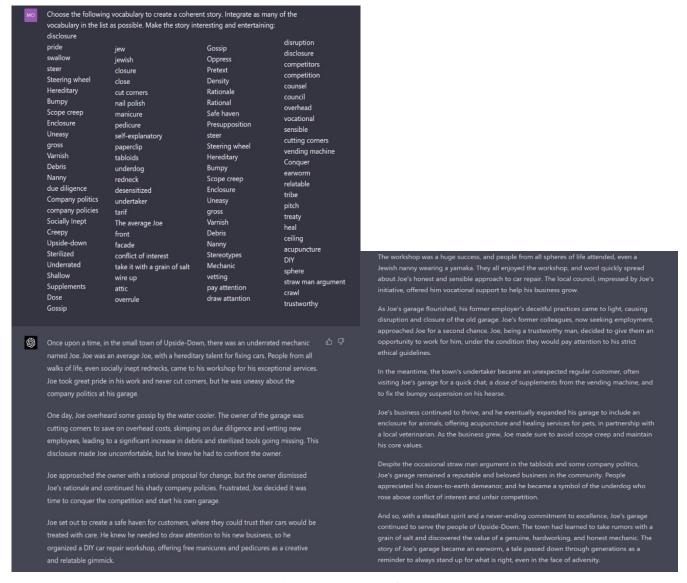


Figure 3. Creating texts with a specific vocabulary set

Of course, as we can also see in Figure 2, we can use AI to generate different types of questions to test any aspect of the previously generated text as well.

Expanding on this strategy, ChatGPT can be further employed to also create vocabulary-focused worksheets or quizzes in a multitude of formats. when simply provided the vocabulary set and asked to generate a variety of questions testing the set or providing a specific template for the AI to use in creating the worksheet/quiz, a learner-specific quiz, along with its answer key if you wish, would be generated in mere seconds. The following example, Figure 4, can illustrate that in practice.



Figure 4. Creating vocabulary quizzes and Worksheets

This approach allows educators to save time as well as design engaging and diverse assessment tools that cater to the unique needs and preferences of their students, further enriching the language learning experience. In fact, with this strategy, educators can also effortlessly integrate students' L1 into their quizzes, even without possessing knowledge of that language themselves as seen in Figure 5.

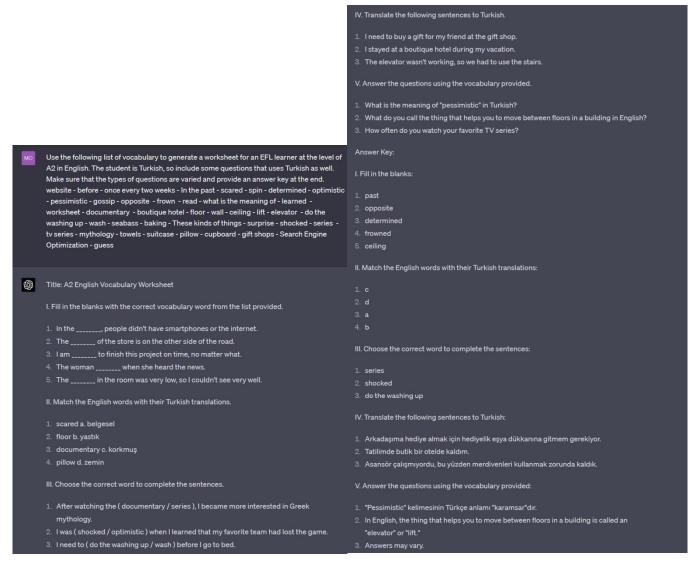


Figure 5. Using L1 that is unknown to the teacher in creating materials

Though the use of L1 in EFL education is controversial, most educators can agree that in some cases it can be beneficial (Inal & Turhanli, 2019); and ChatGPT provides the opportunity of using it if needed with a multitude of students from different backgrounds since the teachers' knowledge of other languages is in fact limited.

AI-Assisted Lesson Planning

Now, we will focus on ChatGPT's potential in facilitating the creation of comprehensive and detailed lesson plans for EFL classes. By harnessing the power of ChatGPT, educators can automatically create lesson plans tailored to specific themes, grammatical objectives, and learning outcomes, all of which can be customized according to their instructional needs. This will save time and energy on the part of the teacher without lowering the quality of the lesson planning; in fact, it might even raise the quality. In Figure 6, we see an example where the teacher tried an initial prompt for their lesson plan, specifying his/her lesson details i.e. themes, objectives, number of students and so on.

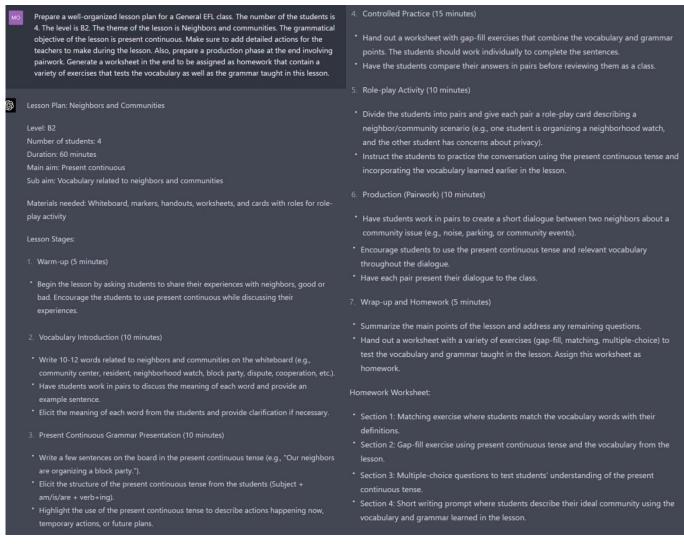


Figure 6. Initial full lesson plan attempt

The manner in which ChatGPT effectively "recognized" the structure of a lesson plan and generated one in line with traditional lesson plan stages is indeed noteworthy. This shows that lesson planning and EFL literature were included in the datasets it was trained on, but that is also partially thanks to the precision of the provided prompt. Nevertheless, the resulting lesson plan may not necessarily align with the teacher's preferences, necessitating modifications. It is vital to emphasize that the purpose of employing ChatGPT in lesson planning is to facilitate the process in conjunction with the teacher's guidance, as the AI's capabilities may not yet suffice independently. In the example provided, Figure 6, the teacher offers additional guidance to refine the lesson plan, leading to an improved version, as illustrated in Figure 7.

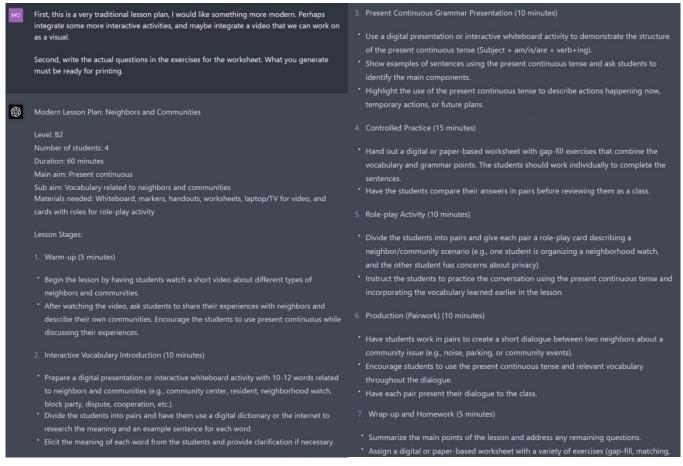


Figure 7. Lesson plan modification

Though this enhanced version fulfills the requested modifications that the teacher provided, there are still some vague points that can be further clarified. For example, the lesson plan mentioned a video to be used as a warm-up, but the teacher may not have such a video. Thus, the teacher can further enquire about such details as it is illustrated in Figure 8.

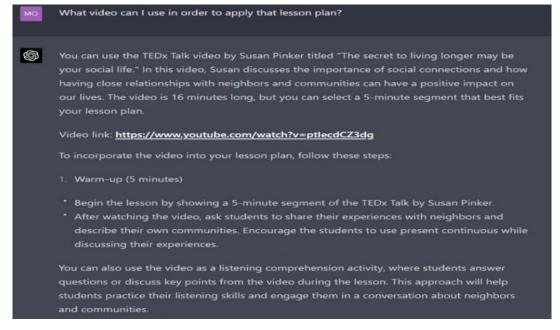


Figure 8. Detailed further inquiries

We can also highlight the fact that whenever ChatGPT is asked about more details, the model always comes up with more tips in relation to the previous conversation i.e. using its "working" memory which makes the information much more relatable. For example, in Figure 8, it did not only provide a URL for the video but also provided some more insights into the use of the suggested video in the framework of the lesson plan that was designed.

This collaborative and innovative approach between the teacher and ChatGPT ensures the creation of lesson plans that cater to specific instructional needs and preferences, ultimately fostering more effective teaching practices. These are but suggestions for using ChatGPT for material development, the practical possibilities that different teachers might come up with are virtually endless.

AI-Assisted Assessment

In this section, we will explore the potential of ChatGPT in the realm of assessment, a critical component of the educational process. Assessment plays an indispensable role in enhancing learners' language proficiency, particularly through the provision of timely and constructive feedback. However, evaluating learners' performance and providing feedback can be a time-consuming and labor-intensive task for EFL teachers. ChatGPT offers a solution to this challenge by again streamlining the assessment process and conserving educators' time and energy. It is important to note that major organizations, such as Educational Testing Service (ETS), the provider of the TOEFL test, have already integrated AI-powered scoring engines, such as their E-rater, into their assessment systems (Runyon et al., 2022), reflecting the increasing reliability and validity of AI-driven evaluation tools. Used correctly, leveraging AI and ChatGPT, in particular, can benefit teachers greatly in the pursuit of better supporting their learners.

Placement Tests

A crucial aspect of assessment in the educational process is diagnostic assessment, which typically occurs prior to instruction. One common use of this assessment is placement tests, which assist teachers in determining the extent of learners' existing knowledge and identifying areas for further development in order to use appropriate materials for future lessons or even mitigate existing errors. AI has the capacity to conduct such assessments (Huang et al., 2021). In the following example, Figure 9, we illustrate how an EFL teacher employs ChatGPT to analyze a text composed by a student with the objective of discerning the proficiency level of the writing.

Model: GPT-4



According to the CEFR, what is the level of English of a student who provided the following writing text:

Nowadays, traveling around the world is not as difficult as in the past, people have more choices about their destination. Some people choose group tours to travel to remote places. Therefore, people are concerned that the group tours damage the culture and the environment of the communities. In my opinion, group tours bring positive effects to remote places.

Firstly, after the Covid pandemic, the traveling industry recovered from the bottom, and the tourist attractions especially the remote tourist attractions are eager to have the travelers to visit. For example, I traveled to Fiji, and I attended a group tour to travel to their tribe. The whole trip was fun, and I gained a lot of knowledge from it. The trip guide told us about the culture and the traditions of the tribe. In the meantime, it is good for the tribe since it is an opportunity for them to increase their income, and save their culture.

Secondly, people are worried about the negative effects on the environment. I do not think they should be worried. The Fiji group tours control the number of the group members. Some remote places are aware that sustainable development is essential to their future, and the governments make laws to protect the environment. For Instance, from May to October, the Similan archipelago are closed to the tourists, and this action is to protect the environment, and make these islands more attractive during the open season.



The writing text provided by the student demonstrates a level of English proficiency that can be classified as B2 according to the Common European Framework of Reference for Languages (CEFR). At this level, students can express their ideas clearly and effectively, engage in discussions on a variety of topics, and present arguments in a well-structured manner.

The text shows the student's ability to organize their thoughts in a coherent manner, make use of a range of vocabulary and grammar structures, and provide relevant examples to support their arguments. There are a few minor errors in the text, but they do not hinder the overall understanding of the content.

Figure 8. Writing CEFR placement test

Needless to say, ChatGPT's familiarity with the CEFR descriptors (North, 2007) provides the rationale behind its conclusion. In fact, ChatGPT even provides further details about the problems in the text. This is important because it allows the teacher to ascertain that the logic is sound.

In a similar vein, the teacher can inquire about these problems and ask ChatGPT to highlight them for further analysis and provide correct alternatives as seen in Figure 10.

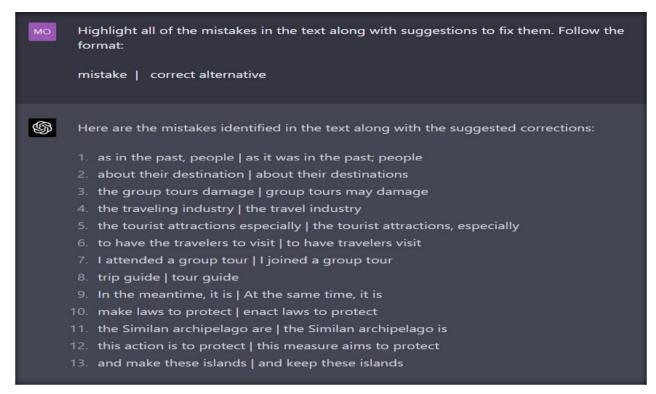


Figure 9. Error recognition

This gives the chance for the teacher to efficiently and quickly find the problems and corrections and pass them over to the learner in a timely manner without having to start that process from scratch.

International Exams and Hyper-Specific Criteria

International proficiency exams, including IELTS, GRE, TOEFL, and others, hold significant importance in the context of English language teaching. In most cases, they are high-stakes exams where Scholarships, immigration, career paths...etc are at stake. Addressing their specific assessment criteria and requirements can pose considerable challenges for educators, given the variability in evaluation standards and the extensive nature of the texts involved. ChatGPT presents a solution to these complexities by offering the capability to assess student performance according to the specific criteria of such examinations; and even specific criteria a teacher might provide. The following example, Figure 11, demonstrates the application of ChatGPT in the context of the independent writing task in the IELTS, underscoring its potential to streamline the assessment process and facilitate a more efficient and accurate evaluation of students' work in alignment with the demands of international proficiency exams.

МО

According to the IETLS Task2 writing section standard, what would this student score if he/she provided this answer to this question:

Some people think they have the right to use as much fresh water as they want, while others believe governments should tightly control the use of fresh water as it is a limited resource. Discuss both views and give your opinion.

Fresh water is precious. Many people think it is the freedom to choose how to consume the fresh water, but some people think since the freshwater is limited, the government should control the consumption. In my opinion, even the fresh water is a limited resources, people still have right to choose how to use it.

On one hand, I do believe that the people have the opinion that the freshwater is limited, and it is important to save it. For children, their parents and the schools teach them the conception about the freshwater. For example, when a child use

On the other hand, I do not believe that the government can deal with everything. There is a idiom that the market is worked in every way not the government. Therefore, if people want to save the fresh water the only choice is to rely on the market instead of the government. For the governments, the priority is to cultivate the opinion that the freshwater is limited and people should consume it in a reasonable way.

All in all, people have the right to choose how to use the freshwater. And for the authorities, the mission is to transfer the concept about the importance of save the freshwater not to control the use of it.



Based on the provided response, it is difficult to determine the exact score the student would receive on the IELTS Task 2 writing section without a detailed analysis of the essay.

However, I can provide some general feedback based on the IELTS Task 2 writing criteria.

Firstly, the essay structure seems to be somewhat unclear. It is important to have a clear introduction, body paragraphs that discuss the main points, and a conclusion that summarizes the main points and provides a clear opinion on the topic. It would also be helpful to have topic sentences in each body paragraph to quide the reader.

Secondly, there are some grammar and vocabulary errors throughout the essay. It is important to use a variety of sentence structures and vocabulary to demonstrate a good command of the English language.

Finally, it is important to provide evidence and examples to support the arguments made in the essay. This helps to demonstrate critical thinking and analysis.

Overall, based on the limited information provided, it is likely that the student would receive a score in the mid-range, possibly around a 5.0-6.0. However, it is important to note that the score will depend on the specific strengths and weaknesses of the essay in relation to the IELTS Task 2 writing criteria.

Figure 10. International exam criteria application and recognition

The feedback generated aligns with the IELTS rubric in key aspects such as organization and task achievement. It provided an approximate score band in addition to offering insights and a rationale behind the assigned score. Furthermore, the example highlights the nuanced understanding that an accurate score band estimation cannot be solely based on Task 2, as the IELTS writing section combines the scores of both Task 1 and Task 2. This level of detail showcases the potential of ChatGPT in offering meaningful, context-specific feedback in accordance with established assessment criteria.

In an effort to generate some sort of feedback report about the text to the learner, a teacher can collaborate with ChatGPT by enquiring further to reveal more details about the areas of interest as well as providing potential fixes for each. This can be examined in Figure 12.

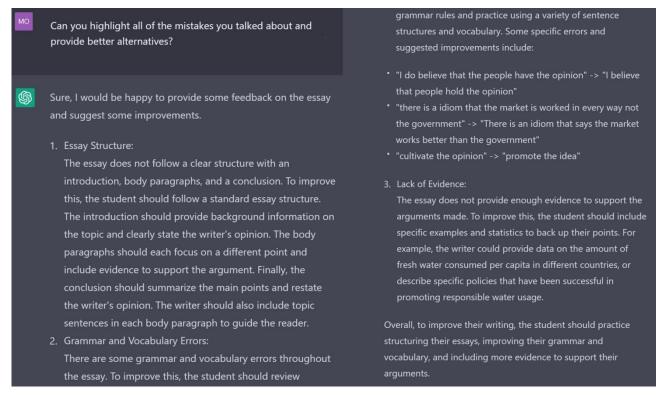


Figure 11. Specific rubric-oriented feedback

In fact, it is able to provide a complete rewrite of the provided text improving it by integrating the suggestion it generated and showing how they can be implemented. This is shown in Figure 13.

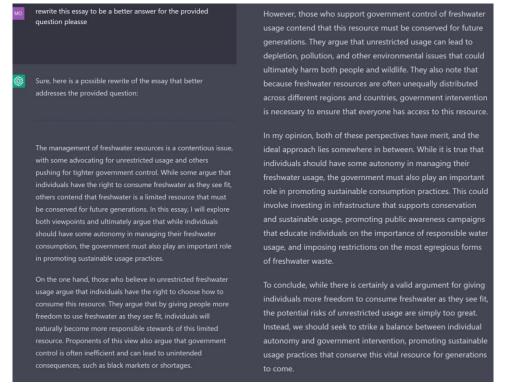


Figure 12. Integrating feedback and reworking texts

Using the new version of the essay, the learner i.e. the original writer can see, in a practical sense, the differences between the two versions and what aspects he/she needs to be cautious about while writing.

Discussion

As demonstrated throughout the article, the output results of ChatGPT have significant potential in enhancing classroom experiences and aiding teachers in their challenging roles. The capabilities of ChatGPT should be harnessed to provide support and resources for teachers, thus creating a more efficient and engaging educational environment. However, ChatGPT is not a perfect system and requires teachers' involvement and feedback to be used effectively. The current limitations such as making up information seemingly out of thin air with accompanying fake sources [also known as hallucinations] (King & ChatGPT, 2023; Rudolph et al., 2023) necessitate that teachers play an active role in the utilization of AI-generated materials and resources, as it cannot stand on its own in its current form. As technology continues to advance rapidly, improvements in AI systems like ChatGPT are expected, making them even more valuable tools in the future.

In addition to ChatGPT, there are various other AI and chatbot models available that can be explored for educational purposes (Pardo et al., 2021). BERT, developed by Google AI, was designed to handle various natural language processing (NLP) tasks (Devlin et al., 2018); its later improved upon version called XLNet extended BERT and mitigated some limitations by the efforts of Yang et al. (2019) who improved the "memory" of the model; and many others are all potential chatbots to be used in all aspects of life. More specifically, some bots, such as Khamingo, recently introduced by Khan Academy (2023), are narrow AI models specifically designed to cater to teachers' needs. These models offer additional options for educators looking to incorporate AI into their classrooms by providing ready prompts and being trained on specific educational datasets to make any educational task more appropriate for a real classroom. Still, ChatGPT is the only one that is widely, freely [GPT3.5] and readily available for relatively everyone

Teachers must understand the limitations of ChatGPT while using it in their classrooms (Zhang & Hyland, 2021). Gaining a clear understanding of what ChatGPT is and what it is not will enable educators to maximize its potential and mitigate any risks or challenges associated with its use. To that end, though teacher training and computer literacy have long been crucial components in the education field (Tapalova & Zhiyenbayeva, 2022), as AI becomes more integrated into education, the potential for a widening digital divide grows, especially within specific teachers' demographics, that can even include learners in all honesty (Jones and Hafner, 2022). Thus, it is essential that teachers receive the necessary training and support to adapt to this new technological landscape, particularly when it comes to prompt design and understanding of AI-generated materials (Reinders & White, 2016).

The use of ChatGPT in education also raises ethical concerns that warrant attention (Hovy & Spruit, 2016). Issues such as data privacy, potential biases in relation to culture and other aspects of AI algorithms (Cassidy, 2023; Rettberg, 2022), and the possibility of generating misleading or inappropriate content are significant concerns for educators and students alike. While addressing these ethical considerations is crucial, an in-depth exploration of these topics is beyond the scope of this current paper. Future research should be conducted to investigate the ethical implications of using ChatGPT and other AI tools in education, ensuring that the implementation of such technologies is done responsibly and in the best interest of all stakeholders involved.

Conclusion

The integration of artificial intelligence (AI), and more specifically, ChatGPT, has proven to be a valuable tool for EFL teachers, offering assistance across numerous aspects of their practice. By employing AI-driven technologies, the processes of curriculum and material development can be considerably streamlined, accelerated, and rendered more learner-centered, as these tools cater to the unique needs of individual learners. Furthermore, AI systems have the potential to greatly simplify the process of assessment (Ohio University, 2023), with specialized tools being continually developed and slated for future release.

Throughout the use cases explored in this article, as well as those beyond its scope, ChatGPT has consistently been and should be employed under the supervision of an expert since the possibility of errors, nonsensical outputs or inaccurate information is always looming due to its limitations (Elsen-Rooney, 2023). It is essential to recognize that ChatGPT is a tool that can be used to support teachers rather than replace them, at least for the time being.

Though in 2021, the adoption of AI was in the early stages (Hwang & Chang, 2021), today's world is very different after only 2 years. As the normalization and integration of AI tools in education and other aspects of our life become inevitable, it is imperative for teachers to adapt and familiarize themselves with their capabilities and limitations since having such knowledge leads to easier adoption as some research suggests (Eguaras et al., 2021). Consequently, the incorporation of AI-related skills, such as prompt design and an understanding of AI's potential, should be included in official teacher training programs. This will equip pre-service and in-service teachers with the necessary competencies to keep up with the rapidly evolving educational landscape and harness the full potential of technologies to enhance their teaching practices.

References

- Cassidy C (2023) Australian universities to return to 'pen and paper' exams after students caught using AI to write essays. The Guardian Online. https://www.theguardian.com/australia-news/2023/jan/10/universities-to-return-to-pen-and-paper-exams-after-students-caught-using-ai-to-write-essays
- Chapelle, C. A. (2001). Computer applications in second language acquisition: foundations for teaching, testing and research. In *Cambridge University Press eBooks*. http://assets.cambridge.org/97805216/26460/frontmatter/9780521626460_frontmatter.pdf
- Devlin, J., Chang, M.-W., Lee, K., & Toutanova, K. (2018). BERT: Pre-training of deep bidirectional transformers for language understanding. *arXiv*. https://doi.org/10.48550/arXiv.1810.04805
- Eguaras, R. C., Ugalde, M. C., & Matas, G. M. (2021). Teachers' attitudes towards chatbots in education: a technology acceptance model approach considering the effect of social language, bot proactiveness, and users' characteristics. *Educational Studies*, 1–19. https://doi.org/10.1080/03055698.2020.1850426
- Elsen-Rooney, M. (2023). NYC bans access to ChatGPT on school computers, networks Chalkbeat New York. https://ny.chalkbeat.org/2023/1/3/23537987/nyc-schools-ban-chatgpt-writing-artificial-intelligence
- Floridi, L., & Chiriatti, M. (2020). GPT-3: Its Nature, Scope, Limits, and Consequences. *Minds and Machines*, *30*(4), 681–694. https://doi.org/10.1007/s11023-020-09548-1
- Fryer LK, Coniam D, Carpenter R, et al. (2020) Bots for language learning now: Current and future directions. *Language Learning & Technology* 24(2): 8–22. Retrieved from http://hdl.handle.net/10125/44719
- Hong, W. C. H. (2021b). Macao Secondary School EFL Teachers' Perspectives on Written Corrective Feedback: Rationales and Constraints. *Journal of Educational Technology and Innovation*, 1(04), 1-13. https://jeti.thewsu.org/index.php/cieti/article/view/17
- Hovy, D., & Spruit, S. L. (2016). The social impact of natural language processing. *In Proceedings of the 54th Annual Meeting of the Association for Computational Linguistics* (Volume 2: Short Papers) (pp. 591-598). http://doi.org/10.18653/v1/P16-2096

- Huang, W., Hew, K. F., & Fryer, L. K. (2021). Chatbots for language learning—Are they really useful? A systematic review of chatbot-supported language learning. *Journal of Computer Assisted Learning*, 38(1), 237–257. https://doi.org/10.1111/jcal.12610
- Hwang, G., & Chang, C. (2021). A review of opportunities and challenges of chatbots in education. *Interactive Learning Environments*, 1–14. https://doi.org/10.1080/10494820.2021.1952615
- Inal, S., & Turhanli, I. (2019). Teachers 'opinions on the use of L1 in EFL classes. *Journal of Language and Linguistic Studies*, 15(3), 861–875. https://doi.org/10.17263/jlls.631526
- Jones R and Hafner C (2022) Understanding Digital literacies: A practical introduction. *New York: Routledge*. https://doi.org/10.4324/9781003177647
- Kerly, A., Hall, P., & Bull, S. (2007). Bringing chatbots into education: Towards natural language negotiation of open learner models. *Knowledge-Based Systems*, 20(2), 177-185. https://doi.org/10.1016/j.knosys.2006.11.014
- Khan Academy. (2023). World-class AI for education: Say hello to Khanmigo, Khan Academy's AI-powered guide. Tutor for learners. *Assistant for teachers*. https://www.khanacademy.org/khanlabs
- King, M. R., & ChatGPT. (2023). A conversation on artificial intelligence, chatbots, and plagiarism in higher education. *Cellular and Molecular Bioengineering*, 16, 1-2. https://doi.org/10.1007/s12195-022-00754-8
- Kuhail, M. A., Alturki, N., Alramlawi, S., & Alhejori, K. (2022). Interacting with educational chatbots: A systematic review. *Education and Information Technologies*, 28(1), 973–1018. https://doi.org/10.1007/s10639-022-11177-3
- Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, 20(3), 271-289. https://doi.org/10.1017/S0958344008000335
- Latham, A., Crockett, K., McLean, D., & Edmonds, B. (2012). A conversational intelligent tutoring system to automatically predict learning styles. *Computers & Education*, 59(1), 95-109. https://doi.org/10.1016/j.compedu.2011.11.001
- Lee JH, Yang H, Shin D, et al. (2020) Chatbots technology for the language teacher. *ELT Journal* 74(3): 338–344. https://doi.org/10.1093/elt/ccaa035
- MacNeil, S., Tran, A., Mogil, D., Bernstein, S., Ross, E., & Huang, Z. (2022, August). Generating diverse code explanations using the gpt-3 large language model. *In Proceedings of the 2022 ACM Conference on International Computing Education Research*, Volume 2 (pp. 37-39). https://doi.org/10.1145/3501709.3544280
- North, B. J. (2007). The CEFR Illustrative Descriptor Scales. *The Modern Language Journal*, *91*(4), 656–659. https://doi.org/10.1111/j.1540-4781.2007.00627_3.x
- Ohio University. (2023). *ChatGPT and Teaching and Learning*. https://www.ohio.edu/center-teaching-learning/resources/chatgpt
- Pardo, A., Jovanović, J., Dawson, S., Gašević, D., & Mirriahi, N. (2021). Using learning analytics to scale the provision of personalised feedback. *British Journal of Educational Technology*, 52(1), 163-180. http://dx.doi.org/10.1111/bjet.12592
- Reinders, H., & White, C. (2016). 20 years of autonomy and technology: how far have we come and where to next? *Language Learning & Technology*, 20(2), 143–154. https://eric.ed.gov/?id=EJ110354

- Rettberg JW (2022) *ChatGPT is multilingual but monocultural, and it's learning your values*. Blog entry. https://jilltxt.net/right-now-chatgpt-is-multilingual-but-monocultural-but-its-learning-your-values/
- Rudolph, J., Tan, S., & Tan, S. (2023). ChatGPT: Bullshit spewer or the end of traditional assessments in higher education? *Journal of Applied Learning and Teaching*, 6(1). https://doi.org/10.37074/jalt.2023.6.1.9
- Runyon, K. R. M., Montilus, K. D., Nachman, L., Herrick, K., & Ferrara, L. A. (2022). ETS® AI LabsTM Ways of Working Tutorial: How to Build Evidence-Based, User-Obsessed, AI-Enabled Learning Solutions in an Agile Framework. *In Lecture Notes in Computer Science* (pp. 119–122). Springer Science+Business Media. https://doi.org/10.1007/978-3-031-11647-6 21
- Tapalova, O., & Zhiyenbayeva, N. (2022). Artificial Intelligence in Education: AIEd for Personalised Learning Pathways. *Electronic Journal of e-Learning*, 20(5), 639–653. https://doi.org/10.34190/ejel.20.5.2597
- Weizenbaum, J. (1966). ELIZA—a computer program for the study of natural language communication between man and machine. *Communications of the ACM*, 9(1), 36-45. https://doi.org/10.1145/365153.365168
- Winograd, T. (1972). Understanding natural language. *Cognitive Psychology*, 3(1), 1-191. https://doi.org/10.1016/0010-0285(72)90002-3
- Yang, Z., Dai, Z., Yang, Y., Carbonell, J., Salakhutdinov, R., & Le, Q. V. (2019). XLNet: Generalized Autoregressive Pretraining for Language Understanding. *Advances in neural information processing systems*, 32. preprint arXiv:1810.04805. https://proceedings.neurips.cc/paper/2019/file/dc6a7e655d7e5840e66733e9ee67cc69-Paper.pdf
- Zhang, F., & Hyland, K. (2021). Student engagement with teacher and automated feedback on L2 writing. Assessing Writing, 48, 100536. http://dx.doi.org/10.1016/j.asw.2018.02.004