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You Only Need to Change Your Direction: A Look at the Potential Impact of ChatGPT on Education



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Abstract

ChatGPT, a generative AI program developed by OpenAI, has raised serious questions about the future of education since its launch in November 2022. This paper argues that ChatGPT has the potential to redefine existing educational theories and the role of teachers in language education. Specifically, the paper examines ChatGPT's impact on language education and suggests ways to incorporate it into teaching practice. Since people have been proclaiming that AI would replace teachers since the 1970s, the history of AI in education is relevant to this paper. Therefore, the paper first discusses the history of AI in education to provide context and highlight how ChatGPT fits into this larger conversation. Afterwards, the paper then explores how ChatGPT might redefine existing learning theories such as Constructivism and Self-Determination Theory using the AIED framework. ChatGPT has the potential to provide learners with personalized and adaptive learning experiences that align with these learning theories. For this reason, the paper will investigate how ChatGPT may impact the role of learners through the lens of Learner Autonomy before looking at how it might also redefine the role of the teacher in the classrooms of the near future. While ChatGPT has the potential to automate certain aspects of language education, the role of the teacher as a mentor and guide in the learning process is still essential. Finally, the paper offers suggestions for how educators can effectively incorporate generative AI programs like ChatGPT into their teaching practice and curriculum. The paper concludes by emphasizing the importance of approaching the integration of AI in education with caution and a critical perspective.

Keywords: Artificial Intelligence in Education (AIED), learning theories, role of the teacher, learner autonomy

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Introduction

Cleo Abrams, a YouTuber best known for her work with Vox.com and her own channel, *Huge If True*, posted the short titled ‘Testing ChatGPT!’ on 2 December 2022 where she demonstrated the capabilities of the generative AI application (Abrams, 2022). In the short video, she prompted ChatGPT to write an essay examining the relationship between Gatsby and Daisy in *The Great Gatsby* by F. Scott Fitzgerald. Within seconds, the AI was able to produce a five-paragraph essay; and while the essay was not without its flaws, it signaled that things were potentially going to change just as rapidly as ChatGPT could produce texts.

Now that ChatGPT and other generative AI applications have entered the mainstream, people have begun questioning the potential implications and impact that these applications may have on a number of professional fields. Originally, the prevailing idea was that blue collar jobs would be those most affected by automation and artificial intelligence; however, white collar workers, once thought to be safe from the effects of technological disruptions, are now thought to be at the greatest risk of mass layoffs and redundancy (Muro et al., 2019). This has led to an increase in the number of people experiencing anxiety at the thought that their jobs and livelihoods may be negatively affected by ChatGPT (Rutledge, 2023).

Considering the levels of anxiety brought on by this new supposed era of artificial intelligence, it is often a good idea to seek out wisdom from literature. In the case of the current moment, or really any moment in which developments in science and culture arise and manifest new sources of anxiety, it is necessary to turn to Franz Kafka, the 20th Century author whose novels, short stories, and parables “spoke for millions in their new unease” during a century of great change and upheaval (Updike, 1995). Since many people appear to be affected by anxious feelings towards ChatGPT, it may help them to read the short story by Kafka that is known in English as ‘A Little Fable’ (Kafka, 1995):

‘Alas,’ said the mouse, ‘the world is growing smaller every day. At the beginning it was so big that I was afraid, I kept running and running and I was glad when at last I saw walls far away to the right and left, but these walls have narrowed so quickly that I am in the last chamber already, and there in the corner stands the trap that I must run into.’
‘You only need to change your direction,’ said the cat, and ate it up.

There is a certain kind of humor at work in this story that speaks to the larger, unconscious truths of the human experience, and before beginning a deep dive into a standard form of literary analysis of this story, it is useful to simplify things and focus only on the essential aspects of this story and of how it relates to the context of this paper. For this purpose, the mouse represents educators facing uncertainty as new technologies rise. In other words, educators are the mouse and the walls closing in around them embody their anxieties concerning the future. As the walls grow narrower, they, like the murine rushing towards its doom, feel powerless as they march forward thinking only about the doom that awaits them—the trap. Luckily, the words of the cat offer useful advice. By pivoting now and taking steps to incorporate ChatGPT into their teaching practices, educators can avoid the trap that awaits those who are unwilling or unable to change their direction. They just have to hope that we do not get gobbled up in the process.

Before educators can change direction, however, it is necessary to accept that they find themselves on the precipice of a great shift in our professions. While many educators are justifiably worried about the ethical and societal challenges presented by the emergence of ChatGPT (Trust et al., 2023), it seems necessary to take a more pragmatic view and accept that while education may change, the change will not include the total annihilation of the field as it exists today (Lim et al., 2023). Some may view the

emergence of ChatGPT as a death knell or some other signal of doom, but it is important to remain optimistic and recognize that modern educators are at the forefront of ‘a golden opportunity to truly reimagine and transform the future of education’ (Lim et al., 2023, p.2). These are truly exciting times to be a professional educator, and hopefully this paper can encourage skeptics to change their direction and embrace the potential of ChatGPT.

The History of AI in Education

1. Thinking Machines

The concept of thinking machines has existed in popular culture for over a century, especially in film. In fact, Fritz Lang’s 1927 film *Metropolis* serves as an early example of a “thinking machine” in popular culture in the form of the *Maschinenmensch*, or “machine-human” in English. The Tin Man serves as an even earlier example of a humanoid machine, appearing first in the novel *The Wizard of Oz* and its later film adaption (Anyoha, 2017).

However, it was not until the development of digital computers that we began to question the possibilities surrounding the concept of thinking machines. In 1950, Alan Turing postulated what the existence of machines that could think might be like, and he likened the concept of teaching a machine to think to the raising of a child (Turing, 1950). A few years later, a group of researchers secured funding from the Rand Corporation and developed the first Artificial Intelligence program, known as the Logic Theorist (Anyoha, 2017). This program was capable of mimicking human decision-making on a small scale and was presented in 1956 in a conference at Dartmouth College where not only the term ‘artificial intelligence’ was coined, but the groundwork was laid for the next twenty years of AI research (Anyoha, 2017; Williamson & Eynon, 2020).

2. Early Days of Artificial Intelligence in Education (1960–70s)

The early days of research into the field of Artificial Intelligence in Education focused on investigating the effectiveness of Intelligent Tutoring Systems (Kulik & Fletcher, 2016). These early computer-assisted instructional programs (CAI) offered limited instruction, hints, and feedback to students after they had provided a response, such as an answer to a mathematical problem (Riedesel & Suydam, 1967). Primarily, these programs were intended to reinforce classroom instruction by providing students with additional practice (Fejfar, 1969).

A few years later, newer programs, referred to as intelligent tutoring systems (ITS), were designed to guide learners through each step of the problem-solving process (VanLehn, 2011). These programs are capable of providing learners with feedback and hints either throughout the problem-solving process or afterward, allowing the program to offer feedback on each step of the solution process.

3. AI in Education (AIED) (1980s and beyond)

With the initial publication of the International Journal of Artificial Intelligence in Education in 1989, and the creation of the International AI in Education Society in 1993, the field of AI in education transformed into a ‘coherent academic research field’ (Williamson & Eynon, 2020, p.224). Research into the use of Intelligent Tutoring Systems revealed implications for the future of education, which could be perceived as either promising or troubling, depending on the preconceived notions of the researchers involved.

MacArthur et al. (2005) found that attempts to use new technologies in education to advance traditional learning goals or traditional teaching methods made very little sense (p.42). Furthermore,

the technology's ability to automate certain processes, such as correcting spelling or grammatical errors, rendered the teaching of these processes obsolete. This situation created a learning environment where the goals of education shifted toward developing higher-order skills required for creative and critical thinking (MacArthur et al., 2005).

In fact, much of the discourse surrounding 21st-century education has revolved around the concept of education's role in a world where computers and other internet-connected technologies are becoming more prevalent both inside and outside the classroom (Chu et al., 2019).

AIED Framework

Hwang et al. (2020) proposed 'a framework for clarifying the roles of AI in education' (p.2). This framework applies to the current discussion on ChatGPT and is helpful in determining ways it can impact the education field. Understanding this framework can help teachers as well as policymakers determine the role that ChatGPT will play in present and future classrooms. In their paper, Hwang et al. (2020) categorized the educational applications of artificial intelligence into the following four roles: 1) Intelligent Tutor; 2) Intelligent Tutee; 3) Intelligent Learning Tool/Partner; and 4) Policy-making advisor.

1. Intelligent Tutor

Perhaps the most popular category of AIED applications is the one that includes intelligent tutoring systems (ITS), adaptive/personalized learning systems, and recommendation systems (Hwang et al., 2020). Historically, ITS is one of the oldest computer applications designed for educational purposes (Kahn & Winters, 2020). Recent studies have argued that ITS may actually be more effective than classroom environments (Ma et al., 2014). Like a human tutor, ChatGPT can provide effective feedback to learners in various fields. In the context of writing instruction, ChatGPT can assess a student's output and suggest areas for improvement in the text, along with providing tips on how to enhance it (Australian National University, 2023). Furthermore, ChatGPT can offer words of encouragement when necessary, letting the learner know when they are making progress. Despite its reputation for creating or hallucinating information that does not exist in the real world (Bang et al., 2023; Alkaissi & McFarlane, 2023), which poses a challenge that learners, educators, and researchers must navigate together, ChatGPT can still adapt its output to match the needs and abilities of learners (Kohnke et al., 2023). Furthermore, ChatGPT can comprehend poorly constructed prompts laden with grammatical and spelling issues, as well as assist learners in correcting mistakes in their writing. However, there are limitations concerning the program's output that need to be addressed. In addition to its tendency to hallucinate academic references and other information, and its knowledge base being limited to 2021, it's important to note that researchers have discovered limitations with its mathematical abilities, raising questions about its effectiveness as an Intelligent Tutor (von Hippel, 2023). Despite these limitations, ChatGPT has the capability to perform the role of an Intelligent Tutor due to its ability to provide answers to a learner's questions in language they can understand, simplifying complex topics into clear language output, bullet points, or metaphors—something it can accomplish in seconds and as many times as necessary until the learner fully comprehends the answer. Its adaptability enables it to 'meet students where they are, build on their strengths, and grow their knowledge and skills' (Cardona et al., 2023, p.18). Furthermore, ChatGPT and other AI can help identify gaps in a student's understanding of a topic, as well as adapt itself to ensure that the student fully comprehends what is being taught (Chaudry & Kazim, 2021). As mentioned previously, a major issue with ChatGPT revolves around its limitations regarding hallucinations and performing mathematical computations. Additionally, while it has been found to pass several exams in a wide range of fields, from law to medicine (Varanasi, 2023), it is difficult to imagine a situation where people studying in these respective fields would be inclined

to turn to ChatGPT to assist their learning unless, of course, they were aiming to be disbarred later in their careers (Sloan, 2023). While ChatGPT does have the ability to fulfill the role of an Intelligent Tutor, the limitations and problems associated with ChatGPT seem to indicate that it is not quite ready to fulfill the role at the present moment. However, this could possibly change in the future.

2. Intelligent Tutee

While there is not a large body of research related to this category due to existing perceptions of AIED (Hwang et al., 2020), the existing research suggests that this view may soon change. Educators are already aware of the learning benefits experienced when teaching others, a process that leads us to evaluate and reflect on our own knowledge and understanding of the topics we teach (Roscoe & Chi, 2008). Answering a tutee's questions can contribute to a tutor's own knowledge-building. Therefore, it stands to reason that learners can experience these same benefits with an artificial tutee. For example, Shahriar and Matsuda (2021) found that 'letting a synthetic tutee ask follow-up questions facilitates' student learning (p.396).

Regarding ChatGPT, while it was not necessarily designed with educational purposes in mind, its ability to generate human-like text responses and engage in roleplay may enable it to assume the role of a tutee. Learners can assist in understanding a topic or concept by answering questions generated by the program. 'Tutoring' ChatGPT could help students reinforce their own knowledge, develop higher-order critical thinking skills, and improve learning outcomes overall.

3. Intelligent Learning Tool/Partner

Within the context of the AIED framework proposed by Hwang et al. (2020), this component could potentially have the greatest impact on learners, especially from 'the perspective of constructivism and student-centered learning' (p.2). AI tools such as ChatGPT can be provided with large datasets that it can then analyze and interpret. This enables learners to focus on developing their higher-order thinking skills, rather than dealing with the drudgery of data collection. Furthermore, AI can present this information in a variety of ways that are effective and engaging for learners. In the past, mind-mapping tools have been able to present information and provide learners with hints to help them identify values within a dataset (Hwang et al., 2011). For example, ChatGPT's ability to answer a learner's questions could guide them towards a better understanding of a large dataset. When a learner struggles to comprehend the presented information, they can ask ChatGPT for greater clarification, which it can quickly provide in language comprehensible to the learner. This way, ChatGPT can function as both a tutor and a learning tool, assisting the student in multiple ways. The adaptability of ChatGPT to fit various learning contexts, either through plug-ins or another program's use of its API, suggests that it may play a role as an intelligent learning tool in the future of education.

4. Policy-Making Advisor

Discourse has revolved around this role for several years (Hwang et al., 2020), with much of the discussion focused on how to govern AI systems. Several governing bodies have developed rules and practices for AI moving forward (Scherer, 2016; Gasser, 2017; Gasser & Almeida, 2017; Gasser, 2023; Halim & Gasser, 2023). However, ChatGPT's potential role as an advisor for developing and implementing effective policy should not be overlooked. As mentioned earlier, ChatGPT has the ability to analyze large datasets and illustrate relationships within that data with acceptable accuracy, despite the presence of hallucination issues (Cheng et al., 2023).

Despite the data's hallucinations, policymakers can still utilize ChatGPT's contributions to facilitate the process of policy development. Policy makers can feed ChatGPT with large datasets and prompt it to identify and categorize trends that they can then use to make policy decisions. Nevertheless, policy makers must remain aware of the various issues related to ChatGPT's tendency to perpetuate systemic biases and discrimination (Whalen & Mouza, 2023). While the AI program can produce texts and utilize logic, it was developed by human beings. This is why ChatGPT should only ever maintain an advisory role in developing policies that will govern large organizations like schools or universities. Furthermore, it should remind people that it is a fallacy to rely solely on the output of an AI when making policy decisions. However, it is entirely up to the members of an organization to decide how they will implement ChatGPT.

Learning Theories

In the context of the AIED framework previously discussed, ChatGPT has emerged as a potent force that could reshape the current discourse on learning theories and different educational concepts and approaches, as well as provide researchers with a toolkit for unearthing new insights into the influence of AI in education. As Hwang et al. (2020) write: 'the integration of AI and Education is not only a transformation of education but also a transformation of human knowledge, cognition, and cultures' (p.4). Therefore, the following discourse will investigate possible ways that ChatGPT might impact learners within the context of prevalent learning theories. This exploration will examine the potential ramifications ChatGPT may have on constructivism and self-determination theory. Before moving forward, it is important to emphasize that what follows is intended to encourage further discussion on the topic and not intended to be an exhaustive, authoritative statement within this domain of research.

1. Constructivism

Epistemologically speaking, constructivism is a complex philosophical approach to the development of a multitude of interpretations of reality. In the context of education, constructivism is partly based on the notion that the learner is an active participant in the act of learning (Kahn & Winter, 2020), and the contention is that learning should be led by the student as opposed to the teacher. Essentially, constructivism argues that learning takes place through a learner's interaction with their surrounding environment and includes a number of factors determined partly by the background and experiences gained long before the learner has even stepped inside of a classroom (Lee & Smagorinsky, 1999). Vygotsky (1978) posited that we can only know what we have constructed through these interactions combined with our ability to contextualize them using language. However, since constructivism is generally conceived as learner-centered, the transfer of meaning is more complex than traditional instructional methods. Since learners come from a wide range of backgrounds and experiences, how they construct meaning is partly determined by forces outside of the classroom. In other words, a constructivist instructional approach takes into account the need of learners to construct their own understanding. Additionally, Taber (2016) suggests instruction should be designed to guide students towards the construction of knowledge as opposed to leaving them to their own devices. What this also means is that teachers should adapt themselves to the abilities of their students, meeting them where they are rather than where they should be; otherwise, the learner may struggle to understand what is being taught and might instead "achieve only a surface-level of memorization without deeper understanding" (Waite-Stupiansky, 1997, p.9). Furthermore, Vygotsky (1978) suggests that learning is a collaborative exercise where social interactions assist with the development of knowledge.

In the context of the AIED framework, ChatGPT's adaptability allows it to potentially perform the role of an intelligent tutor in a student-centered learning environment. The program has the ability to adapt its output to fit the needs, preferences, and knowledge-levels of learners (Kohnke et al., 2023).

This should allow learners to operate in spaces where the focus is on helping them develop their understanding of new knowledge. Additionally, ChatGPT, due to its ability to simulate intelligent human language, can be used to encourage group discussions on a number of different topics as well as simulate collaborative environments where learners are able to work individually or in small groups while conversing with the chatbot (Bii, 2013; Kuhail et al., 2022). When working with an individual learner, ChatGPT has been found to encourage language learning with its ability to keep a conversation going (Lin, 2023). Even further, ChatGPT's ability to role play would allow students the opportunity to explore their own knowledge and understanding of topics through interactions with an intelligent tutee, which would allow learners to develop themselves more fully (Iversen, Pedersen, Krogh, Jensen 2015). For these and many more reasons, researchers should consider exploring the impact of ChatGPT within the context of a constructivist pedagogical approach. Studies may choose to focus on developing methods for including ChatGPT in collaborative environments involving individual students or groups of varying sizes. In a similar vein, studies can be conducted comparing the effectiveness of peer-learning groups with ChatGPT-powered learning.

2. Self-Determination Theory

Researchers have long considered self-determination theory to be an effective conceptual framework for understanding and nurturing student motivation (Jeon 2022). Motivation plays an important role in learning, and research has shown that when students are actively engaged in learning, they perform better in class and on assessments (Kahu & Nelson, 2017). On the other hand, learner motivation varies significantly due to diverse aspects and factors, and therefore, one learner's motivations may be entirely different from those of another learner (Dornyei & Ushioda, 2011). One of the challenges of education lies in the struggle to reach a point of consensus and create an environment where the extrinsic and intrinsic needs, wants and desires of learners are met (Ryan & Deci, 2000; Vansteenkiste et al., 2006). Educators often struggle to develop ways of motivating students to learn (Ferrer et al., 2022). Furthermore, a failure to adequately motivate students has been linked to poor academic outcomes (Skinner et al., 2008).

Researchers have sought to better understand the role of motivation in encouraging learning, and this has given rise to numerous theories and instructional approaches. One such theory is self-determination theory (SDT), which is largely concerned with the role environmental factors play in human development (Ryan & Deci, 2017). This theory also assumes that people are preternaturally driven to learn, to develop their mastery, and to grow within their social environment (Ryan & Deci, 2020). Furthermore, the challenge of motivating students is solved by creating a learning environment where their basic needs are met, and these needs include autonomy, competence, and relatedness (Ryan & Deci, 2017). Research has shown that when students are placed in an environment where each of these basic needs are met, their motivation to learn increases considerably as well as their engagement during the act of learning, and this includes environments such as social media or mobile learning applications (Jeon, 2022).

In its role as an intelligent tutor, ChatGPT has the ability to create an environment that meets the basic needs of learners. Zhai (2023) suggests that ChatGPT has the potential to engage learners through personalized learning experiences tailored to fit their individual needs, abilities, and interests, with the potential to positively impact learner outcomes and achievement. This ability has the potential to create an environment where learners and their need for autonomy. Studies have shown that the link between feedback and learner motivation is inextricably linked to the goals of the learner (Tricomi & DePasque, 2016). Feedback can help students determine their competence when performing a task, as well as provide them with the information they need to continue their development. Kuhail et al. (2022) recognized that chatbots like ChatGPT can function as motivational agents by providing positive or

encouraging feedback to learners as they complete learning tasks. This capability would meet the basic need of competence as learners would be able to explore the effectiveness of their performance in real time within the context of their choosing. This ability could also then be explored in contexts where learners collaborate with one another to complete group tasks generated for them by ChatGPT, creating an environment where their basic need of relatedness is met as they interact with their peers and develop their sense of belonging.

On the other hand, Baron (2023) argues that ChatGPT might have a negative impact on student motivation, robbing them of agency and the desire to improve themselves as they may fail to see the point of various exercises and tasks assigned by their teachers. For example, the fact that ChatGPT can effortlessly produce a five-paragraph essay within seconds may lead students to start questioning whether there is any point to undertaking the arduous task of writing. This is a serious concern considering the role motivation plays in producing positive learner outcomes. If the capabilities of ChatGPT lead to the creation of an environment that is counterintuitive to meeting the basic needs of learners, they may lose their motivation to improve themselves. However, future research projects may determine whether ChatGPT can truly function as a motivating or demotivating agent in educational contexts in addition to exploring its potential to meet the basic needs of learners.

Currently, how ChatGPT manages to impact these and other learning theories remains up for debate and speculation. However, it stands to reason that the future of education research may focus more on understanding the impact of ChatGPT on learners within the framework of a variety of learning theories.

The Role of the Student

When attempting to understand how ChatGPT may impact education, it is imperative to place the student at the center of any discussion. Therefore, a discussion about the role of ChatGPT in encouraging learner autonomy is necessary. Similar to the previous section, this discussion will offer only a small window into what will assuredly become an enormous paradigm of research and discussion in the future of education research.

Learner Autonomy

Learner autonomy is an important concept in education. According to Benson (2013), learner autonomy is “complex, multidimensional, and variably manifested” (p.840). In other words, this complexity means that it is difficult to pinpoint an exact definition of learner autonomy, as how we define it is influenced by a number of factors outside of the control of researchers and educators, not to mention young or disadvantaged learners whose autonomy may be limited by their access to supporting technologies. However, learner autonomy typically involves learners taking control of their learning and going beyond traditional classroom instruction to pursue knowledge relevant to their self-perceived needs and interests (Holec, 1981; Borg & Al-Busaidi, 2012; Yildiz Durak, 2023). The proliferation of computers and mobile devices has provided learners with greater freedom to choose what they want to learn. At the same time, the ability to access knowledge from all over the world across a number of different formats has created new challenges for instructors.

Furthermore, creativity is an important aspect of learner autonomy. According to Lan (2018), advanced technologies can empower students’ creativity, and therefore argues that researchers and educators should “investigate the effects of cultivating students’ ability to become creators in a technology-rich environment” (p.860). In the classroom, teachers can pursue pedagogical approaches that curate creative and critical thinking (Blau & Shamir-Inbal, 2017), empowering students to pursue their

creative interests can also create opportunities for them to collaborate with their peers as well as enable educators to design and manage activities.

Learner autonomy is where ChatGPT may have the greatest impact on learners and educators. While the program has limitations in certain areas, such as in the case of hallucinations, ChatGPT can impact how we approach learner autonomy in a number of ways. For example, it can provide students with answers to their questions on a wide range of topics as well as assist students in developing creative projects. In the context of language learning, ChatGPT can provide continuous language practice that may otherwise be impossible in a given context, allowing students to develop without many external limitations (Huang et al., 2022). ChatGPT can also enhance students' creativity by providing them with simple explanations for a variety of activities. Its ability to provide feedback, in addition to assisting learners with improving their work, means that students can improve almost in real time. Moreover, students can pursue their curiosities without worrying about judgment or fear of asking trivial or insubstantial questions during class discussions, as ChatGPT provides a relaxed and supportive environment for learning (Chen, 2023). Given the importance of inquiry in fostering autonomous learners (Skeates, 2012), this aspect is something worth exploring in future studies.

Perhaps most importantly, the ability of ChatGPT to foster learner autonomy helps to liberate both students and teachers. Instead of operating primarily as an authoritative voice of knowledge and direction, teachers can instead assume the role of a guiding hand and collaborator during the learning experience. The role of the teacher will be discussed in the next section, but it is important to remember that learners may become more empowered by ChatGPT, and this shift may greatly impact how teachers approach their classrooms.

The Role of the Teacher

This is where the paper returns to its original premise: the idea that ChatGPT is poised to revolutionize education in such a way that regular human teachers have no place in it. Once educators recognize that AI has been a part of education since the 1960s, they can begin to understand that ChatGPT, while revolutionary on the surface, is not necessarily something new, but a product of decades of research and development. We also learn that a significant body of research exists exploring Artificial Intelligence in Education. Furthermore, understanding that clear roles exist for AI in education enables us to start planning pedagogical approaches aligned with these roles while creating pathways towards a comprehensive comprehension of our positions as educators in AI-powered learning environments.

But what is a teacher's role in this type of learning environment? At first glance, answering this question seems to require substantial forward thinking because the truth is, at this point in history, nobody knows. However, the opportunities and challenges presented by ChatGPT can provide us with some clues about how the role of the teacher in the classroom may evolve. As mentioned previously, ChatGPT can offer learners a non-judgmental learning environment where they can safely pursue their interests and creative pursuits. However, ChatGPT also has the tendency to hallucinate information or perform tasks incorrectly (Confino, 2023). There are also concerns about what students might ultimately do with ChatGPT's output and the potential negative impact it might have on the development of their critical thinking skills, as they might defer their thinking to the AI (Cotton et al., 2023; Halaweh, 2023). As mentioned earlier, there is also the question of the impact of ChatGPT on student motivation. At this point in time, it is impossible to predict whether its effects will be positive or negative (they might even be a combination of both), but we can take steps towards predicting these effects based on what we already know about motivation.

Therefore, the role of the teacher is to cultivate a ChatGPT-friendly learning environment that recognizes the program's limitations and is designed to work around its weaknesses. Teachers can

utilize ChatGPT's tendency to generate erroneous information as a learning experience, assigning learners the task of verifying the accuracy of ChatGPT's output. Helping learners acknowledge the program's limitations should contribute to their development of critical thinking skills, as they learn not to accept its output at face value. Additionally, teachers can provide guidance on how to use ChatGPT to develop the writing and language skills of their learners, while creating activities that foster critical thinking and focus on specific ideas rather than broad concepts (Baskara, 2023; D'Agostino, 2023). Furthermore, teachers can design tasks to assess students' comprehension of various topics throughout the semester, emphasizing the development of their ideas over the accuracy of their language output (Dayton & Buck, 2023). For example, Kohnke et al. (2023) suggest prompts that can be used and adapted to encourage students to engage with ChatGPT with the intent of challenging and developing their language comprehension and production. Teachers can provide prompts to learners and then let learners take the reins. Crafting tasks that can be completed in the classroom would help teachers mitigate concerns about cheating, as they can move around the room to monitor student output and provide assistance as needed. In essence, the role of the teacher would be to establish an inquiry-based learning environment that promotes higher-order thinking skills, with ChatGPT operating as an intelligent learning tool.

ChatGPT may revolutionize education by placing the focus more on the student rather than the teacher, and this is not a terrible thing if teachers remain vigilant and attentive to the needs of their learners. ChatGPT can liberate teachers from the repetitive tasks associated with operating in a large classroom environment such as answering repetitive questions or providing extended practice (Huang et al., 2022), and allows them to focus on teaching and nurturing critical thinking skills that will empower learners well beyond the classroom and into the world that awaits them.

Discussion

While there are a number of ways that ChatGPT can assist teachers in a variety of subjects, the focus of this section will be on ways that language teachers can incorporate it into their language classrooms. As mentioned in the previous section of the paper, there are three areas where teachers can make use of ChatGPT's ability to rapidly produce coherent text to provide extended practice for learners. For example, language teachers can prompt the application to create exercises where students are then tasked with identifying and correcting errors. These errors can be grammatical, lexical, or whatever the teacher requires them to be. Figure 1 shows an example of the results of such a prompt.

This exercise can be adapted to fit the context of the lesson. Educators can prompt ChatGPT to generate passages that correlate with the CEFR as seen in Figure 2.

The results found in both examples above can be copy-pasted onto a word document and then printed off, disseminated digitally, or shown on a screen. It is also possible to prompt ChatGPT to produce passages that correlate with specific grammatical or lexical points. While the results can often be relatively boring, they can help an instructor emphasize key or problematic areas. For example, Figure 3 shows how ChatGPT might respond to a prompt requesting specific lexical practice.

These are examples of how ChatGPT can assist an educator with producing practice that fits the specific needs of a group of students. One group of students may have different issues than another, and while teachers are typically adept at identifying and even predicting areas where their learners may struggle, ChatGPT allows for flexible classrooms that are able to organically meet the challenges of language education.

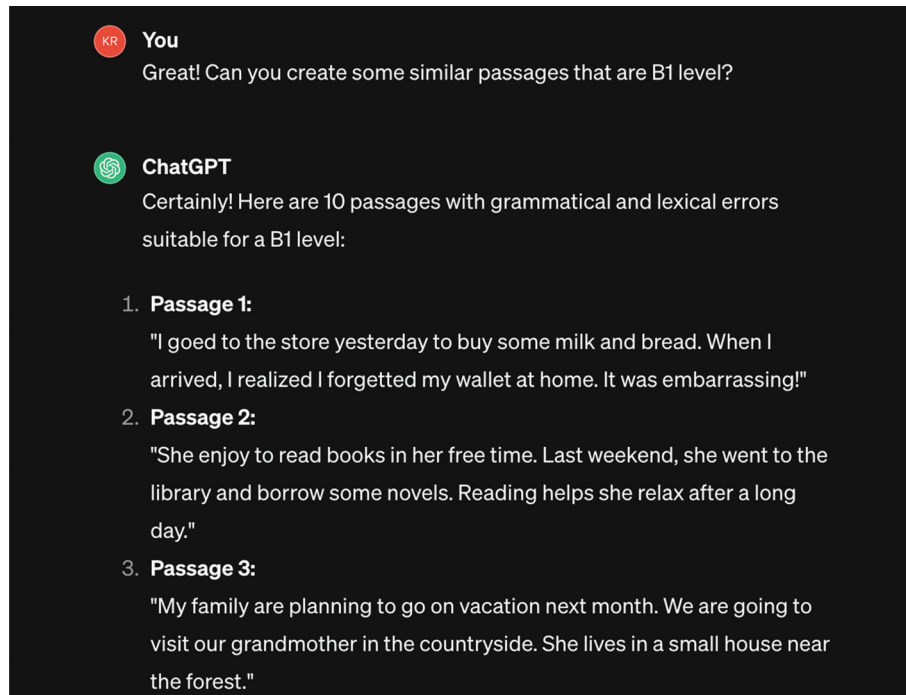


Figure 1 *An example of a prompt requesting passages with errors and the results.*

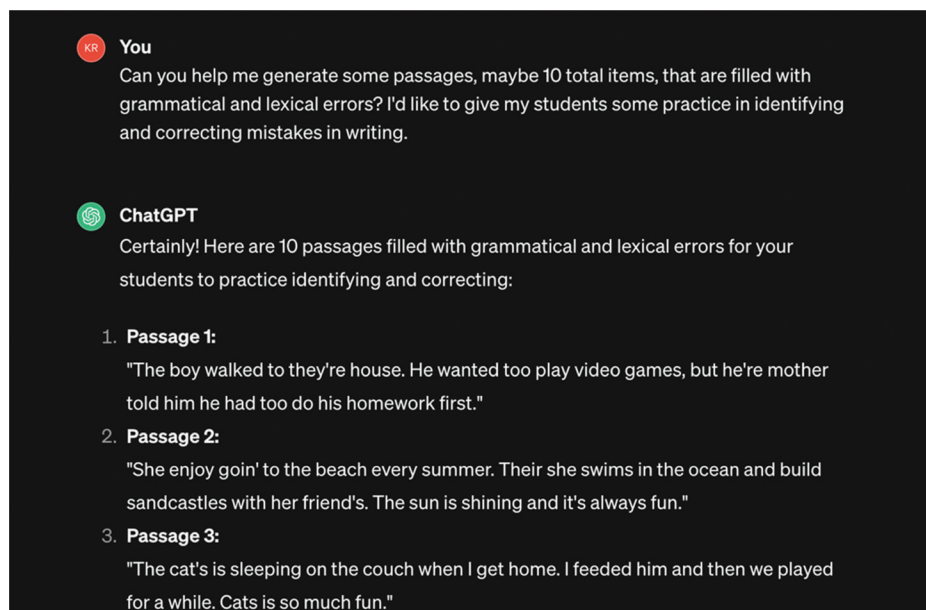


Figure 2 *An example of a prompt requesting passages that correlate with the CEFR.*

However, as it concerns the production of teaching materials, ChatGPT should not be counted on to produce all teaching materials, and its output should not be accepted without checking it first for accuracy. Figure 4 shows an example where ChatGPT hallucinates information while following a prompt to produce questions for GK Chesterton's short novel *The Man Who Was Thursday*.

The intention of this prompt was to explore whether ChatGPT could be expected to produce questions based on a novel or any work of literature. While ChatGPT was familiar with the novel and its

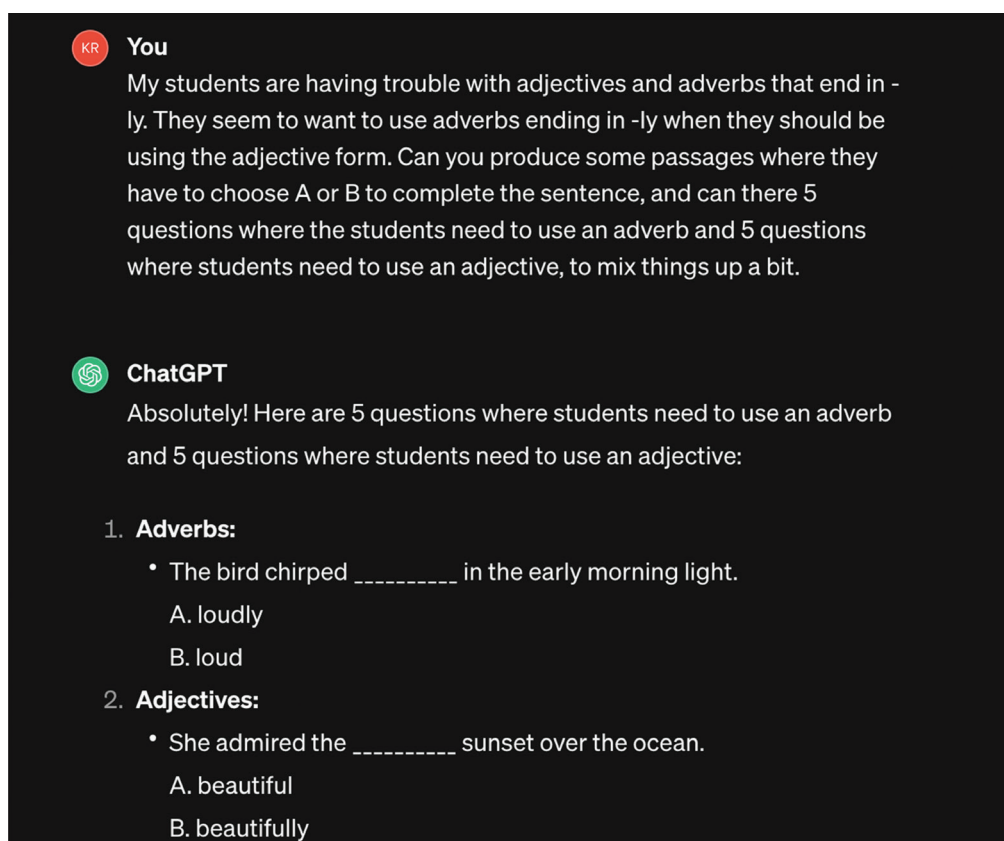


Figure 3 An example of a prompt to produce extended practice with adjectives and adverbs based on an observed issue in a language classroom.

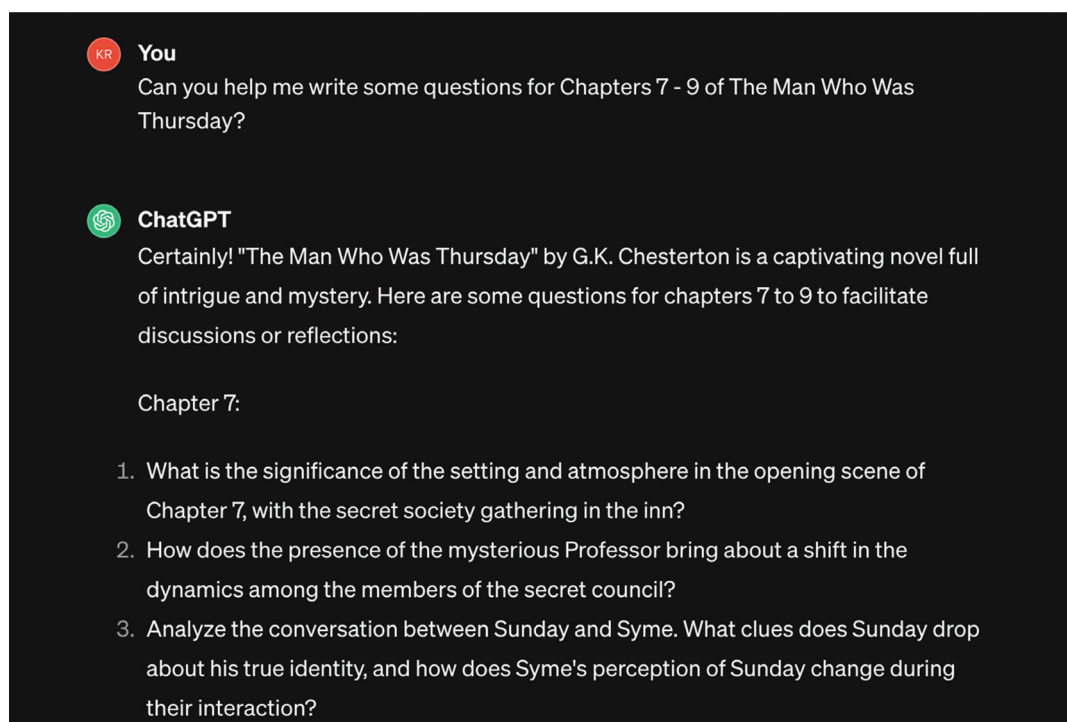


Figure 4 An example of what can happen when ChatGPT is prompted to produce questions on a work of literature.

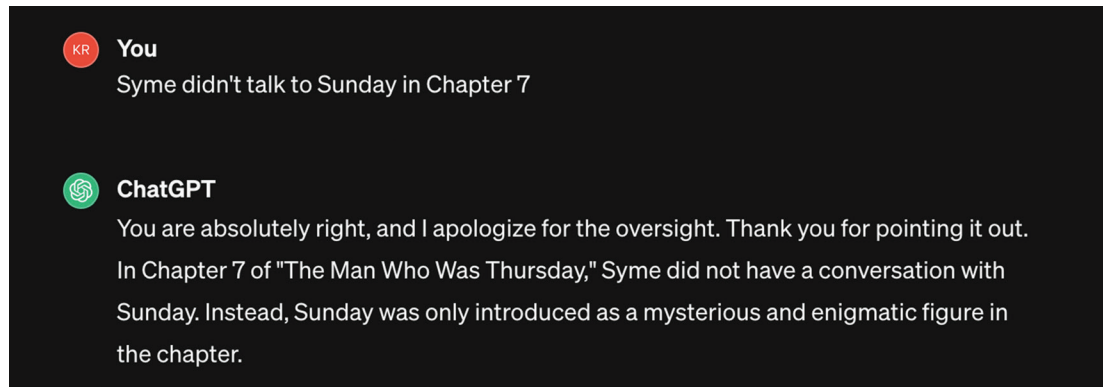


Figure 5 *ChatGPT acknowledges that it made a mistake.*

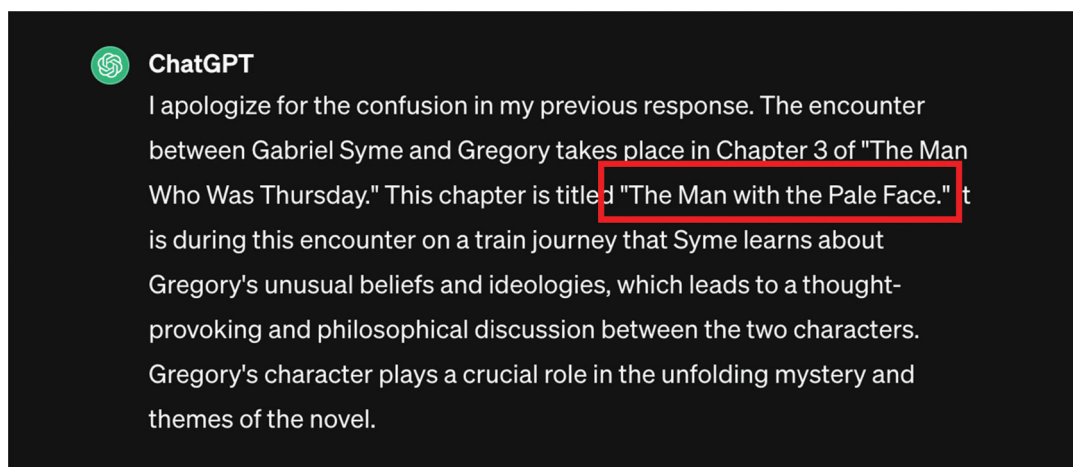


Figure 6 *ChatGPT hallucinates and renames a chapter.*

characters, it appeared to confuse various plot points. In the figure above, the question produced by ChatGPT seems to suggest that Sunday and Syme, two characters in the novel, had a conversation; however, this conversation never took place. Figure 5 shows how ChatGPT responds to its own mistakes, but other attempts to produce questions based on the original prompt did not improve greatly after the mistake had been pointed out.

The problems continued when ChatGPT began hallucinating and renaming chapters of the novel. The correct title of Chapter 3 is 'The Man Who Was Thursday', but ChatGPT hallucinated a new title as seen in Figure 6.

While this was frustrating, luckily it was only an experiment to see how adept ChatGPT was at producing materials that went beyond language-specific areas. In certain situations, hallucinations such as these could be incorporated into a lesson that focuses on training learners to not accept everything produced by ChatGPT at face value.

Within certain contexts, ChatGPT can be an invaluable tool for educators, and language teachers should embrace and incorporate it into their language classrooms, but its limitations are such that it should not replace the judgement, knowledge, and abilities of teachers. Not yet, anyways.

Conclusion

Hopefully this paper has accomplished its goal of assuaging the anxieties and uncertainties that educators may be feeling towards ChatGPT. The history of AI in education shows that researchers have been attempting to tackle the issue of thinking computers in classrooms for decades. Furthermore, the AIED framework suggests that ChatGPT has a distinct role to play in education, and this role should encourage new exploration into the impact of ChatGPT on learners, learning theories, and educators. Additionally, communities of practice should start to appear where teachers share and discuss ways to incorporate ChatGPT into their instructional practice.

While it is easy to feel anxious whenever a new technology enters common usage, AI in education is nothing new, and there is a large body of research that educators can turn to when deliberating over the kind of role they want ChatGPT to play in their classrooms. Banning it outright would only delay the inevitable and would also put educators and learners at risk of losing ground and falling behind those who have already incorporated it into their daily and professional lives. While it is easy for educators and workers in many fields to experience feelings of anxiousness over the future of education and the place of educators in it, these feelings should pass as people become more familiar with AI and begin to incorporate it into their lives the same way they have other technologies. Instead of rejecting ChatGPT, educators should be excited for the possibilities that lay before them. ChatGPT has the potential to greatly benefit learners and educators as it can place greater focus on learners and allow teachers to put more effort into providing effective instruction that meets the challenges of the 21st century and beyond. If nothing else, It is important to recognize that educators are currently standing at a turning point in the history of education, and hopefully this paper has encouraged any skeptics to stop resisting and embrace the potential of ChatGPT.

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