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Research on the Application of Artificial Intelligence in English Teaching in Higher Education

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Abstract: With the rapid development of science and technology, the domain of artificial intelligence (AI) witnesses a surge in growth. It is employed in English language teaching for non-native speakers both at home and abroad. This essay will examine the advantages and disadvantages of AI applications in English teaching, with a particular focus on higher education in China. A sampling survey is conducted to investigate the utilization of AI in English language teaching at the post-secondary level. The research involves administering a questionnaire to a sample of 50 college students to inquire about the integration of AI in the classroom. This paper reveals that the two most prevalent applications of AI in the classroom is assisted reading and spoken interaction. Nevertheless, the most evident challenge is the tendency of students to over-rely on AI. In addition, this paper points out the impacts of constructivism on English teaching by taking English writing as an example. These discussions provide some reference for future research on this topic. In light of the aforementioned conclusions, educators may gain insight into the potential applications of AI in the classroom aiming to optimise teaching efficiency.

Keywords: Artificial Intelligence, English teaching, Constructivism, Class efficiency.

1. Introduction

In the 21st century, the rapid advancements in artificial intelligence (AI) and educational technology have revolutionized the landscape of education globally. AI is being integrated into classrooms to provide real-time feedback, adaptive learning platforms, and intelligent tutoring systems[1]. The essay primarily focuses on the AI use for English teaching in China, and discusses the pros and cons of AI in English language teaching in the context of China's educational development. A questionnaire survey is conducted to find out the popularity of AI-assisted English teaching and the application of AI in English teaching. The questionnaire takes college students in the southern areas in China as the object of the study in order to gain the basic situation of AI use and their expectations for it in College English teaching. In addition, according to the published document, ChatGPT-assisted language learning has a positive impact on certain language skills, particularly on writing and grammar skills, as well as on new vocabulary acquisition[2]. Hence, it also takes 'English writing' as an example to discuss the impact of constructivism on English teaching in the age of artificial intelligence. This essay will explore the popularity and the main fields of AI use in college English class in China to provide a reference for later study in AI's application to English class. Besides, the

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research on the influence of Constructivism in AI eras is able to offer some teaching ideas for college teachers in the future teaching.

2. Methodology

2.1. Data Information

The 50 respondents are all junior students from different universities in China .The questionnaire covers many aspects such as respondents' understanding of AI in English teaching, support level, practical application, and cognition of the potential and problems of AI technology in class. Through the analysis of the questionnaire results, this paper will be able to more comprehensively understand the respondents' attitudes and views on AI in English teaching, and provide references for further discussion of the application of AI in English teaching.

Most of the respondents have a general view on the use of AI in English teaching and approve of introducing AI into English class. Half of them claim that teachers would use AI tools to assist teaching in the class. According to Figure 1, 46% of the participants prefer using AI to help their reading such as intelligent translation, 38% choose to simulate real English scenes to foster oral interaction while the rest of them prefer writing evaluation. This demonstrates that assisted reading and oral interaction gain higher popularity in AI-assisted English teaching. 48 out of 50 agree that using AI to help English teaching can improve class efficiency.

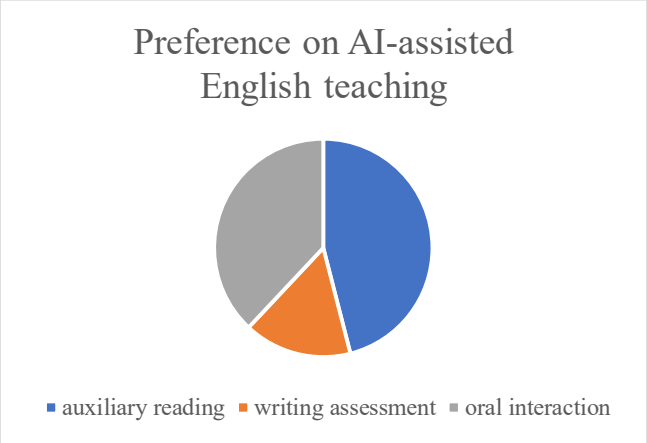


Figure 1: Preference on AI-assisted English Teaching

According to Figure2, participants think AI can be used in many aspects in English teaching. Individualized learning has the highest support accounting for 90%. This is followed by recommendation of teaching resources, explanation of knowledge points and tracking of learning progress, which were supported by 76%, 60% and 60% respectively. There is also a significant amount of support for homework marking assessment, accounting for 58%. In addition, 2% of people chose other methods. It is obvious that personalized learning is the area where AI is considered to be the most effective aid in teaching.

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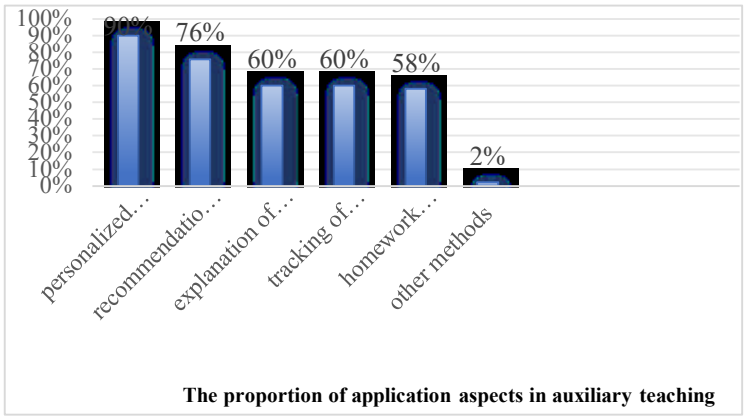


Figure 2: The proportion of application aspects in auxiliary teaching

As for the help AI brought to the respondents, 72% of them thought their reading and writing skills were improved followed by the skill of listening and speaking, which accounted for 62%. The vocabulary and sentence accumulation accounted for 58%. The knowledge of culture and grammar use was supported at 50% and 46% respectively(seen in Figure 3). This shows that students generally agree that the improvement of their reading and writing skills is the most significant.

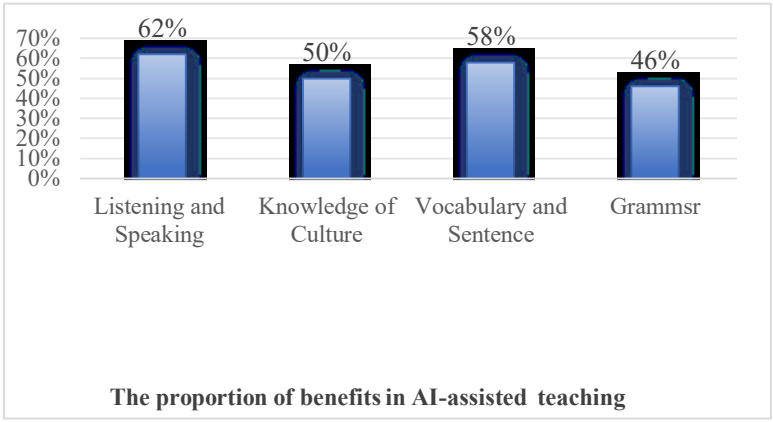


Figure 3: The proportion of benefits in AI-assisted teaching

After that, participants proposed that one of the biggest challenges of applying AI to English teaching is interaction and communication, which means AI-involved teaching can't satisfy students' emotional requirements accounting for 38%. Followed by technical costs and the supervision of teaching quality and the faculty training occupies the lowest proportion. In addition, a majority of the students worry that they lack autonomy which will lead to their over-reliance on AI. The second concern is the immaturity of AI technology. Meanwhile, there are some respondents worrying about the effect of teachers in English teaching.

When the participants were queried as to which AI technologies they considered to have the greatest potential for utilization in an educational setting, automatic speech recognition (ASR), the most frequently selected option was followed by natural language processing and image recognition, at 52% and 40%, respectively. In comparison, machine learning was selected the least frequently, at 28 percent. Overall, respondents expressed considerable optimism and confidence in the potential of ASR, natural language processing, and image recognition. A majority of 84% of respondents believe that comprehensive technical assistance should be provided when integrating AI in an educational setting. The proportion of respondents who identified education for students as a priority area was 58%, while 27% and 40% respectively identified faculty training and law policy as their primary

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concerns. This indicates that the majority of students anticipate the provision of comprehensive technical assistance to optimize the quality of instruction through the integration of AI.

In terms of the specific applications of AI in English language teaching, 72% of respondents believe that AI could be used to analyse relevant data and inform teaching design, thereby alleviating the pressure on teachers. The proportion of respondents who believe that teaching courseware and material can be used as a tool for evaluating students is 48%, while 54% consider it to be a means of developing teaching courseware and material. The majority of respondents (82%) consider the ability of AI to stimulate students' interest and enhance their engagement to be its most significant advantage. The majority of respondents (60%) believe that the most significant benefit of AI in education is its capacity to provide a vast array of learning resources, thereby expanding students' knowledge base. Additionally, 54% and 50% of respondents, respectively, view the reduction of teachers' workload and the ability to conduct cross-regional teaching as key advantages. The aforementioned data illustrate that the majority of students are more concerned with the appeal of the course than any other factor.

2.2. Questionnaire Design and its Process

In recent years, the rapid development of science and technology has led to the maturation and widespread adoption of artificial intelligence (AI) in China. The objective of this questionnaire is to examine the utilization of AI in the context of higher education English language teaching in China, with a view to offering insights that may inform future developments in this field of study.

The questionnaire was completed by 50 college students in south China. ChatGPT's adaptability in various learning experiences, such as interactive learning, creative writing, and exploring different cultures, as well as its ease of access and quick feedback, was also considered[2]. By utilizing AI to create immersive and interactive language learning environments, students can gain exposure to diverse cultural contexts and perspectives. This not only enhances their language proficiency but also prepares them to engage more effectively in a globalised world[1]. These factors are taken into account in the design of the questionnaire. Furthermore, human-computer interaction, machine learning, and knowledge graphs based on AI can provide ideas and technical support for English teaching research, lesson preparation, and classroom teaching. Consequently, the question regarding the most promising field of application of AI in the classroom is posed.

2.3. Analysis

In conclusion, the majority of respondents to this survey expressed a favourable opinion regarding the utilization of AI in English language instruction at the university level. Conversely, the utilization of AI in an educational context may present both advantages and disadvantages. The majority of participants concur that the integration of AI into the educational process can enhance the efficacy of the learning environment and stimulate students' engagement with the subject matter. However, the primary challenge lies in the potential for students to become overly reliant on AI, which could lead to plagiarism and, to some extent, impede their critical thinking abilities. Furthermore, the technique aspect should be developed in order to more effectively facilitate AI-assisted study. It is recommended that both students and teachers receive enhanced training to facilitate their adaptation to AI-assisted English education.

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3. The Impact of Constructivism on English Teaching in the Age of AI

3.1. Constructivism

Constructivism is a learning theory that places emphasis on the active role of learners in the construction of their own understanding. In contrast to a passive reception of information, learners engage in reflection on their experiences, the creation of mental representations, and the incorporation of new knowledge into their schemas. This facilitates more profound learning and comprehension[3]. A review of the general definition of this theory reveals that constructivism places emphasis on the initiative of learners to obtain knowledge. Teachers are responsible for providing guidance and support to students when they encounter difficulties. It is therefore essential to identify an appropriate method for college students to learn English in a constructivist context. It would be beneficial for colleges and universities to implement the cognitive law of constructivism and develop a comprehensive English course teaching service platform. This could be achieved by leveraging the advantages of information technology and digital education, with the aim of enhancing the quality of English course teaching services[4]. This indicates that constructivism is a more appropriate approach for practical foreign language teaching in the context of artificial intelligence.

3.2. Taking English Writing as an Example to Explore the Influence of Constructivism

It is widely accepted that writing constitutes one of the most crucial aspects of learning a foreign language. The methodology employed in the teaching of writing is of great consequence with respect to the acquisition of writing skills and the resulting output for students. One of the most significant principles of constructivism is learner-centredness, which facilitates the promotion of students' autonomy while acquiring a foreign language[5]. The application of AI in the context of teaching and learning necessitates a certain degree of student autonomy. This entails the ability to discern and identify the specific data and information that is relevant and useful to them, rather than simply accepting and utilizing information without critical analysis. With regard to the present methodology for teaching and learning college-level English writing, it is of paramount importance to employ network technology in the teaching of writing[6].

The teaching of English writing provides an illustrative case study of the application of constructivism in the context of artificial intelligence. The utilisation of AI, such as ChatGPT, as an information repository has the potential to facilitate the composition of essays. The utilization of intelligent platforms, such as Grammarly, for the purpose of editing written work or a website in China, named Pigaiwang, which provides immediate feedback on students' writing assignments, is a beneficial practice. A university lecturer specialising in English writing advised her students to utilise AI, such as ChatGPT, to assist them in the composition of their essays. She stated, "Students are first encouraged to compose their own essays, which they can then compare with articles generated by ChatGPT." Subsequently, students are encouraged to compare their original work with the AI-generated text and identify areas for improvement, making revisions accordingly. This AI-assisted method has the potential to enhance students' autonomy in learning English while simultaneously alleviating teachers of some of the pressures associated with their teaching.

The current approach to teaching English writing is facing challenges, particularly in terms of providing sufficient practice opportunities and timely feedback[7]. It is therefore evident that students require the provision of appropriate tools or platforms to facilitate the enhancement of their writing abilities, encompassing grammatical, lexical and stylistic competencies, in an autonomous manner. The cognitive and practical advantages of ChatGPT not only enhance their writing efficiency but also engender a positive disposition towards the act of writing[8]. At the juncture of AI-assisted instruction, constructivism becomes a pivotal tenet.

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4. Discussion

The advent of artificial intelligence (AI) in educational settings has evoked a mixture of enthusiasm and apprehension, underscoring the imperative to examine its ramifications, particularly in the domain of English language instruction[9]. It is beyond dispute that AI has brought considerable benefits to English teaching, particularly in the areas of speaking and writing. A plethora of AI tools and platforms are currently available for educators to utilize in their pedagogical practice. This represents an opportunity for the majority of college English teachers in China to integrate AI into their teaching practice. Doing so has the potential to significantly enhance the efficiency of classroom learning, as well as fostering greater interest among students in acquiring English language skills. Conversely, the disadvantages of AI in the context of education cannot be overlooked. There are concerns that there may be an excessive reliance on ChatGPT. Other concerns included the occasional occurrence of connection issues and errors, as well as the encouragement of shortcut learning strategies[2]. It is anticipated that AI will become a pervasive tool in the future, given the rapid advancement of science and technology. By integrating big data and artificial intelligence into the English teaching ecosystem, educators can enhance the quality of teaching resources and facilitate resource sharing within the system[10]. However, it is essential to consider the challenges in order to optimise English teaching in China.

5. Conclusion

The objective of this essay is to examine the extent to which AI-based English teaching is being adopted in Chinese universities. To achieve this, data will be collected from a questionnaire. Moreover, this paper highlights the influence of constructivism on college English teaching in the context of AI.

The results of the questionnaire survey indicate that the application of AI in college teaching, particularly in the context of English classes, is an inevitable trend that the use of AI can enhance the efficiency of the class and make it more engaging, thereby encouraging students to participate actively. Additionally, the two primary methods of utilizing AI in English teaching, as identified by respondents, are assisted reading and oral interaction. There exist certain disadvantages involving the tendency of students to rely excessively on AI, which can lead to various challenges in their academic pursuits like plagiarism. In general, the application of AI in English teaching at the university level is found to have a greater number of advantages when the results of the questionnaire are taken into account. Further investigation is required to ascertain the full potential of AI in this context while the AI system itself must be more comprehensive, and the training of students and teachers must be enhanced. A limitation of this study is the relatively small number of subjects included in the questionnaire. Furthermore, the article does not discuss the relevant methods for addressing the existing problems. To enhance this scenario, further surveys must be conducted, and future research should concentrate on the practical solutions to the emerging issues.

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