

REVIEW ARTICLE

A review of the necessity of AI application in English education in Chinese colleges and universities

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ABSTRACT

The integration of Artificial Intelligence (AI) in Chinese universities for the teaching and learning of the English language marks a significant transformation from traditional methods of teaching. It addresses the global demands of communication and places the country on a higher pedestal in the international arena. This paper explores how AI has transformed the teaching and learning of English by improving engagement and modernizing the methods of teaching. This has been done with the help of a number of secondary literatures on the theme. Tools such as chatbots and Intelligent Tutoring Systems have enhanced the vocabulary, pronunciation, and grammar of students. However, AI comes with its own threats. Challenges such as over-dependence on technology and breach of data emphasize the need to use AI consciously. Though AI can never replace humans, its proper utilization guided by educators and policymakers can definitely help enhance the English language learning experience in a country like China.

Keywords: artificial intelligence; english language education; china, university teaching; digital learning; blended learning; AIED

1. Introduction

The development of Artificial Intelligence (AI) and its increasing usage have brought about changes in many sectors of life, including the academic and educational world. In universities in China, the teaching and learning of the English language plays an important role in placing the country on the global education scene. The increasing globalization and intermingling of the different countries have proved the importance of English on a worldwide scale and depicted its power in helping one survive in the international arena. With the introduction of AI, there has been a visible transformation in the effectiveness of teaching, academic research, and the modernization of educational standards. According to the Chinese College English Teaching Guide by the Ministry of Education of the People's Republic of China^[1], English teachers in colleges should reap the benefits of modern educational technology when it comes to teaching the language. Thus, the traditional methods of teaching English should be replaced with the coming of newer technologies, integrating skills of the information age and bringing about a reform in the teaching-learning dimension. Chinese universities are witnessing a form of blended English learning, incorporating the advantages of AI with traditional methods of college teaching. The technology of AI is being used for a number of purposes

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like online delivery of knowledge before class, offline knowledge during class, and online expansion of knowledge after class. A number of technologies such as MOOC platforms, collection of data with the help of AI, and using AI to provide feedback and supervision to students are involved in the new teaching strategies^[2]. These help increase student engagement with the subject matter and improve their English language skills.

Despite its benefits, the increasing usage of AI in English education and research also poses a number of challenges. Authors Yan and He explain that the traditional English classrooms in China are highly exam-oriented and teacher-centred, resulting in performance pressure for students^[3]. Students feel pressured to maintain socially acceptable behaviour in classrooms with maturity due to the strict teacher-centred teaching practices. One of the most significant risks is the over-reliance and over-dependence on technology. This affects the critical thinking abilities of students and their ability to interact with humans, which is essential when it comes to learning a language. This results in psychological concerns about using AI in education. The collection of data with the help of AI may also lead to data breaches and security concerns, an aspect which must be effectively dealt with. AI tools may also foster cultural and linguistic biases, which proves to be a hindrance in multicultural educational environments. This social challenge can be addressed by university students in order to create a safe and sound language learning environment. The first step to be taken by students to overcome the barriers of AI includes being literate about the scope and usage of AI. Students must have a relationship with AI built on transparency, trust, and privacy. They must also get guidance from policymakers regarding the risks associated with AI and the ethics associated with its usage^[4]. The increasing usage of AI requires students to develop adaptable skills to face the challenges and surge of AI in the modern world. University students should be ready to face the changing job market in the current digital scenario. Instead of relying on fixed skill sets, students need to be ready to adapt to jobs that are emerging with the rapid development of AI. Familiarity with the system quality of AI tools impacts its success rate. Authors Wang and Sun argue that university students in China prefer high-tech and user-friendly tools and applications that deliver active learning with convenience^[5]. The learning environment for AI-based learning tools should therefore have an inclusive and user-friendly approach to gain more traction from university students. AI adoption in education should have both creativity in content and ease of use for its success. As mentioned above, over-reliance on AI may hinder the critical thinking abilities of students. However, the proper usage of AI, which includes the usage of codes and contexts, requires human judgment. Thus, critical thinking and creative skills are important to survive in society today. Adaptable skills need to be developed in order to survive in a world full of AI technologies. Collaboration and communication are important for students to face the threats and challenges of AI. AI tools have helped transform the teaching of English. An example of an application that has helped in this regard is Duolingo. These platforms help students learn at their own pace and address specific weaknesses. The study of Xu et al. showed positive results regarding the role of AI in the overall learning achievement of English language learners^[6]. Another study by Hsu et al. showed how AI tools helped in increased vocabulary knowledge among EFL learners^[7]. Thus, the use of AI in learning English has helped modernize the system of language learning, making it more effective for students across the world. It showcased that EFL learners making use of AI tools displayed great vocabulary knowledge and outshined their peers in this respect. However, when it comes to the use of AI in language learning, there is a gap in the knowledge available. The identified gap is a lack of understanding in the usage and application of AI tools for Chinese students who want to learn the English language proficiently. The study aims to address the research gap by understanding how AI applications can help Chinese students in learning English education along with guidance from teachers, policymakers, and the government.

2. Literature review

2.1. Generative AI

Generative AI is versatile as it not merely analyses, but also focuses on creation of content. Generative AI produces original text that is based on learning from vast datasets and user prompts, unlike predictions^[8]. Generative AI produces human-like content that is trained through existing datasets.

2.2. Discriminative AI

In simple terms, the data from Discriminative AI is highly based on predefined criteria. Discriminative AI can be explained as an AI model that focuses on distinguishing between different sets of data based on pre-decided boundaries and probability^[8]. This form of AI models uses predictions and pattern recognition that is based on supervised learning.

2.3. Generative AI and its usefulness in Chinese universities

With the emergence of AI, a number of different institutions have started using this technology in their teachings and research. With time, artificial intelligence technology has moved on from just computers to robots and buildings^[9]. One of the most workable definitions of AI states that it is a machine that can do things that human beings require intelligence to do^[10]. AI is a learning tool that is quite effective in reducing the burden on teachers as well as students and it also improves the learning experience of students^[11]. With AI becoming a part of the school curriculum, many believe that it will bring about a sort of revolution in the field of education. The use of AI in education has led to the interest of policymakers in the potential of AI in educational settings. AI for Education (AIED) has turned out to be a huge market which is expected to grow further in the next five years. A number of different AI projects have been launched that cater to the various needs of students. The Intelligent Tutoring Systems (ITS) focus on delivering individualized and automated instruction to students^[12]. A few other systems that focus on making instruction and learning easier for students include AI-assisted applications, AI-assisted simulations such as Virtual Reality and Augmented Reality, and Chatbots. The most easily available and widely used tool is the Chatbot. These are increasingly being used in the educational context for a number of purposes like student support, examinations, IT, and health^[13,14]. AI improves learning efficiency through machine learning-related technologies, related to cognitive learning theory and statistics models. Thus, AI-assisted teaching includes machine learning and evolving technologies that enhance student engagement as well as their academic outcomes.

AI-assisted teaching finds its roots in a number of traditional educational theories that display the interactions of intelligence systems between learners and educators. When it comes to individualized learning, at the micro level, the psychological and cognitive theories are seen as simplified versions of a larger model known as the Piaget-Kauffman-Keller model. These smaller theories either add to or break away from the bigger model^[15], act as approximate versions of it^[16], or show consistent patterns over time^[17]. At the micro level, AI proves to be helpful in providing a personalized learning experience according to the desired pace of the learner^[18]. AI also plays an important role in the dissemination of knowledge through games and Virtual Reality.

2.4. TOE – ABC Framework

The TOE-ABC framework helps to understand the decision regarding the adoption of a technology. Within the TOE-ABC framework, the technological context focuses on usability and compatibility, the organisational context examines support and resources, and environmental context checks regulatory policies^[19]. These technological, organisational, and environmental contexts work as antecedents. Within the organisational context, data-driven decision-making through digital leadership can be considered

organizational antecedent. Besides, data-driven decision-making of organizational variable is determined as behavioural mechanism and organisational creativity as its consequence. Next, within the ABC model, antecedent means the situation before the event, behaviour means the action, and consequence means the following behaviour^[19]. The TOE-ABC framework helps to understand the usability criteria of AI technologies that offer academic support for students by exploring their behaviour in the context of AI working processes.

2.5. AI and the social environment

The next level, the meso level, includes societies and communities. Here, learning usually takes place within a social environment^[20]. In the educational sector, this system is known as the “community of enquiry” that makes use of technology^[21]. At this level, AI provides information to groups or communities and encourages them to include more members. A theory takes shape here, the theory of “cognitive presence”. According to this theory, people who are part of a group understand concepts and gain knowledge together^[22]. In the final level, called the macro level, researchers use a method called “Cultural Historical Activity Theory” (CHAT). This method involves the learning of a group of groups. At this level, AI helps in creating a connected learning system by bringing together people and communities. New technologies, such as deep learning and large language models (LLMs), help in gathering information from large amounts of data. This information is then applied in different fields, going beyond where they originally started. Besides promoting the development of learners, AI also plays an important role in improving the efficiency of teachers and the effectiveness of teaching practices. With the help of AIED, teachers are able to maintain closer interactions and communications with their colleagues, expand the plethora of their professional knowledge, and bring about a positive change in the teaching-learning process^[23]. With the application of AI, methods of data analysis and technological processes help learners engage with academic content more clearly, leading to improved learning efficiency. According to Knox^[24], AI can help solve problems, imitate human methods of thinking, and process information. It can also improve education at different levels by improving its quality and providing a personalised learning experience. Thus, artificial intelligence has enhanced the effectiveness and accessibility of education, leading to the exposure of both students and educators to the global scene. By breaking geographical barriers through online learning platforms and analysing global educational trends, AI has helped in moving beyond local geographical boundaries and fostered multicultural collaborations.

2.6. AI and the psychological environment

An AI-infused educational environment helps students gain a quality environmental perception and psychological well-being. With AI guidance, students are able to make informed decisions^[25]. It can reduce panic as AI can guide students on steps to be undertaken to ensure positive growth. Further, adaptive functioning and greater emotional stability are gained due to positive mindfulness to adapt to positive cognitive appraisals^[25]. This means guidance from AI can reduce emotional exhaustion among students. However, AI tools can initiate active learning, but may also lead to information redundancy that can lead to emphasising convenience over technological novelty^[5]. This means AI tools should be user-friendly which may offer psychological support to students rather than leading to overdependence on technology.

2.7. AI and the cultural environment

In traditional Chinese education system, classroom interaction between a teacher and student is usually teacher-centric. Teachers are considered as primary source of information for students, within which the role of the students is generally receptive^[26]. With AI intervention, the idea of teachers as the primary source is challenged. This is because Generative AI offers creative content and feedback. Further, Chinese students face peer pressure due to their non-fluency in English-speaking abilities in international contexts^[26]. The

integration of AI in education can help address the challenge of competitive pressure for Chinese students in the global domain. This way, AI-based education can be integrated with social and cultural aspects to create a supportive learning environment for students.

2.8. Organisational and digital leadership

Digital leadership in AI-based learning helps gain stability in ethical data governance practices. Data-driven processes through digital leadership ensure effective resource allocation, learning analytics and support creativity^[27]. This suggests that the intervention of digital leadership in AI-based education in China can help reduce uncertainty for organisational challenges of inconsistent and fragmented use of AI tools by students and teachers. Without accuracy in digital leadership, the environmental psychology of teachers and students would become unstable in the context of consistency in AI adoption in educational contexts.

3. Materials and methods

In this paper, data has been collected and reviewed from articles and journals already published by scholars. This method is referred to as a secondary systematic literature review. In such a method, new data or information is not collected. Rather, data is gathered and evaluated from existing works of literature. This can be done by following a few steps:

- 1) Selecting appropriate journals and articles
- 2) Coming up with conclusions

This paper has looked at different articles on the use of AI in Chinese universities for teaching the English language. For research, keywords such as “english education in China”, “generative AI”, and “learning psychology of Chinese students”. The inclusion criteria were peer-reviewed journal articles and books that helped gain insight into AI education and theoretical framework of TOE-ABC. Further, articles focusing on Chinese students and universities were included. Articles with primary data collection and written in English were included. The exclusion criteria were articles that had secondary data collection. The paper integrates the TOE-ABC framework to explore the underlying mechanism of AI-infused English education in Chinese universities. The paper uses ten sources for the review of how AI tools can be helpful in imparting knowledge of English education for Chinese students. The major article sources are from technology and education such as the *International Journal of Language Instruction, Education and Information Technologies, International Journal of Emerging Technologies in Learning, Educational Technology & Society, and Interactive Learning Environments*. These journals are selected because they offer empirical insights along with a nuanced understanding of AI and its importance in education in social, cultural, and psychological aspects.

Recent years have seen a development in the use of AI technology in the field of education. One of the most important contributions has been in the teaching and learning of different languages. In a country like China, where the English language plays an important role in bringing about international development and placing the country on the global education scene. With the incorporation of AI, Chinese universities have been able to transform the traditional methods of instruction with respect to the teaching of English. This has helped China in realising its goal of internationalizing higher education in the country. Jiang et al. have stated that in the world of information technology, traditional methods of English language teaching are becoming obsolete and facing great challenges^[28]. Through the literature review of quite a few works by different scholars, they have come to a conclusion that intelligent methods of teaching, that move away from the traditional methods, such as neural network models, K-means clustering, and GA-MLP-NN algorithm help in realising the application and analysis of spoken English in colleges and universities. In their work,

they have used quite a few experimental models like Computer Intelligent Computing and Neuroscience, GA-MLP-NN arithmetic, and the TDNN model to prove the utility of information and communication technology in establishing a learning system that is complete and helps students in learning English in colleges. Shi et al. have conducted a study on the increasing demand for technology in the classroom, with respect to the teaching of the English language in colleges^[29]. Deep learning methods are gradually increasing in importance in China. This is one of the most important aspects of AI in education^[30,31]. The authors of this paper have conducted research work based on evidence. By doing so, they have tried to contribute their opinions towards the transformation of educational policies and strategies. Thus, the findings of this study have proved useful in creating an engaging learning environment with the use of AI. They have given special attention to the field of education in their paper and the use of AI in it. The Chinese government has taken important steps to improve the quality of education in their country. With the help of AI, China aims to give global recognition to their higher education sector. College English teachers can make use of AI to improve their methods of teaching, design lesson plans, and cater to the needs of individual students. The increasing use and development of AI in education in China may give the country international recognition. This paper has looked at the benefits and threats posed by AI. It has also explored the revolution in the teaching abilities of educators. When it comes to academics, AI is quite a new innovation in this field. It has also recently started being used for language learning. Since the last three decades, technology-enhanced language learning (TELL) methods are being used by scholars and researchers^[32]. Huang et al. have discussed a few works that have looked at the use of AI in education in general^[33]. This study has looked at the use of AI research trends in language education through a systematic review. A particular research area has been chosen for this purpose. The major publications on the use of AI in language learning and teaching have been explored for this study.

4. Results and discussion

In the work of Jiang et al., two classes from a Chinese university were selected to explore the role of computer information technology in enhancing English learning in colleges^[19]. From the experiment conducted, it is clear that technology enables students to learn English in a more comprehensive way, improves their enthusiasm, and teaches basic English literacy skills. This result is demonstrated by students of the experimental group, while the control group consisted of students taught by teachers using traditional methods of teaching.

This study combines English teaching in colleges with information technology in order to create an AI-based algorithm. In the case of spoken English correction program, the GA-MLP-NN function is made use of. A neural network model is constructed which leads to the establishment of a complete learning system and enhances the English learning abilities of students. The study conducted by Shi et al. used both qualitative and quantitative measures to find out the experiences of students in the experimental group, taking part in the multimedia learning model^[29]. With this approach, students displayed increased interest and engagement, fostering a deeper connection with the learning process on the whole. Prior to this experiment, there was not much of a difference between the proficiency in English language learning between the students of the experimental group and the control group. After the experiment, the results showed a stark difference between the English proficiency test scores of the experimental group and the control, with the former scoring more than the latter.

The results show the increasing proficiency in English by college students in the experimental group, as a result of the introduction of educational technologies. The researchers created a smart classroom learning model that may help in deep learning and engage students completely in the learning process. This model

promotes an effective teaching-learning process in the modern classroom environment. It makes use of AI technologies and the process of deep learning to enhance the teaching of the English language among students in China (Figure 1).

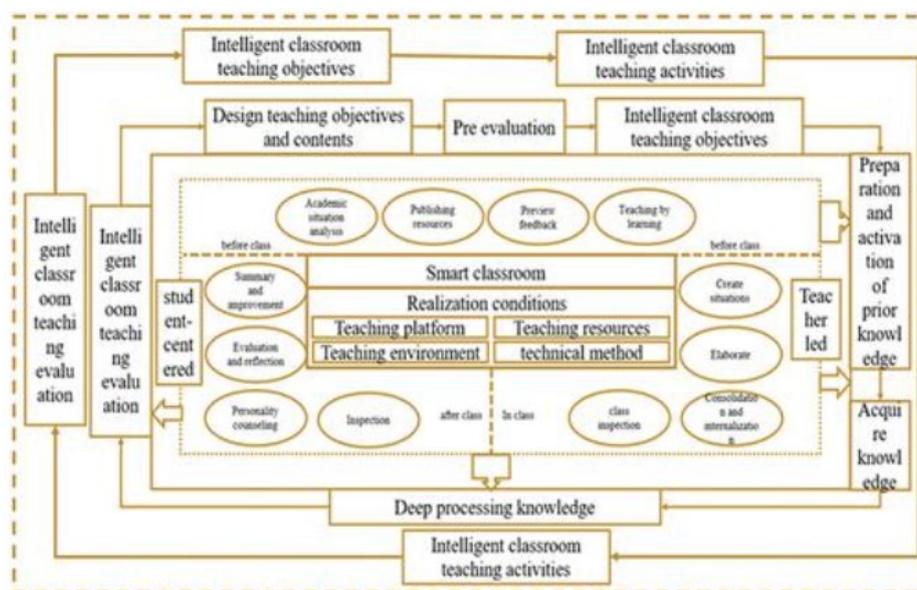


Figure 1. The smart classroom teaching model.

In China, multimedia teaching helps in understanding basic knowledge and structures of language in a comprehensive way. Thus, using these approaches in the classroom helps teachers enhance student engagement and promote deep learning. Generative AI is different from discriminative AI in terms of creativity and efficiency. Generative AI tools help students in brainstorming new ideas and developing divergent thinking practices^[19]. This creates new opportunities and possibilities for students in educational and professional sectors. However, the efficiency of AI is based on organisational and university-level intervention. With a university-level intervention AI usage by students can be transformed to creativity, rather than mere rote learning^[19]. This is because creative AI integration, along with organisational intervention can help in the creation of innovative learning opportunities. This offers both psychological and pedagogical support to Chinese students, with proficiency in the English language. Ding and Zhang have provided a historical overview of the development of AI in both the US and China^[34]. For this paper, the development of China will be given more priority. The development of AI technologies in China has begun fairly recently, particularly in the last 20 years. With this emergence, China has cultivated the aims of being the country that dominates AI by 2030. These aims are mentioned in the “Next Generation Artificial Intelligence Development Plan”, published in 2017. Thus, with this target, China is increasingly developing strategies and plans to gain achievement in this field. According to the TOE framework, government intervention helps in making constructive data-driven decisions. The support of government acts as an organizational and environmental enabler for the success of AI-based education practices in China due to sustainable digital integration^[27]. Here, government policies can be considered organizational context to support the resources for AI. Further, the environmental context helps government bodies to regulate policies for universities and students. With macro-level guidance from the government, micro-level working processes can be strategically maintained and regulated. The main sector in which China wishes to see the most amount of AI integration is that of education. The country believes that through AI in education, its aims of becoming the global leader will be easily met. The educational policies in China emphasize the use

of AI in classrooms, leading to personalized and interactive learning sessions. A number of initiatives, like the “Smart Education” project, work towards employing AI at all levels of education, from primary to universities. For teaching English at the college and university levels, different platforms such as the IBM Watson Education can help professors make lesson plans and teach according to the needs of the curriculum. Similarly, Virtual Reality and Augmented Reality help students learn language in realistic environments. This helps them communicate easily and with confidence. With the advent of technology, translation and transcription services have been developed. These help reduce language barriers and help people from different backgrounds converse with each other. Different AI-powered platforms like Coursera and edX offer online courses and training programs for educators. These trained educators can then go on to guide students in their academic lives. Thus, through the context of the US-China rivalry, the authors of this paper have shown the positive impact of AI in the field of education and how it can prove to be useful in teaching and learning the English language. As already mentioned, Huang et al. employed the method of biometric analysis in their research work to analyze the use of AI in language education^[33]. Reviews of different publications from the Web of Science (WoS), Education Resource Information Center (ERIC), and Scopus were conducted. Thousands of papers and publications were identified from these journals that focus on the concept of AI in education. In total, 30,386 publications were identified on this topic. The figure below shows the rising trend in the use of AI in the field of language learning from 2000 to 2019 (**Figure 2**).

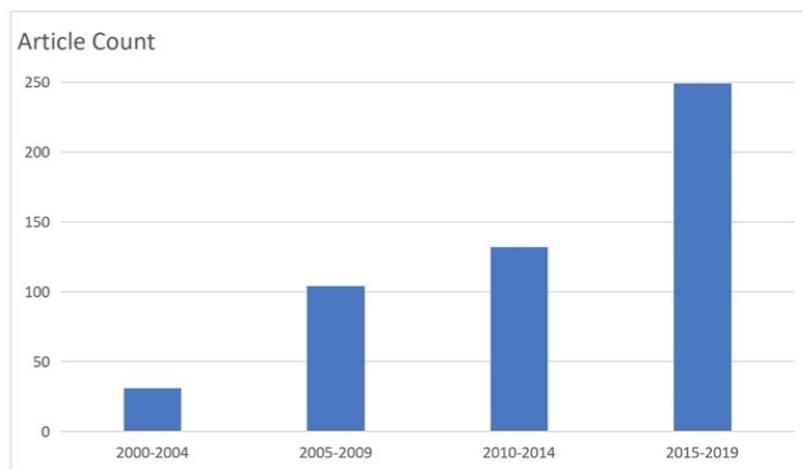


Figure 2. AI-related publications over the years.

Three of the most influential sources that were used to conduct research are IJAIED, Computers & Education, and ICAIE. According to the results of this study, it can be said that the use of AI for language learning started increasing since 2016. This led to the development of AI applications. A few of these platforms are Genie Tutor that improves writing in English and EJP-Write that helps in writing English academic journals. Interactive Strategy Training for Active Reading and Thinking (iSTART) was developed to help adults improve their language comprehension and learning^[35]. ITS to teach Structure Strategy (ITSS) was developed by Wijekumar et al. to improve the reading comprehension of students^[36]. In the end, the results showed that students who used ITSS performed better than the ones who did not use this technology. A study by Chen and Li showed that the development of a vocabulary learning system helped students learn new words^[37]. It helped introduce new words when students had the time to learn it. According to the result this study, students who used this technology gained more knowledge than the ones who did not use it. An AI agent to help with conversation and communication was developed by Ayedoun et al.^[38]. This helped students become more confident by asking questions to the AI without fear. Overall, this study looked at the

increasing use of AI in language learning by publications from 2000 to 2019. There are a few limitations in this work, such as the limited number of sources that were used to conduct this study. However, this problem can be tackled in the future by taking into account sufficient number of articles and publications that will help in undertaking a more comprehensive work of research (**Figure 3**).



Figure 3. Conceptual framework of learning behaviours.

4.1. Skill development in English through AI

In the modern world, English is a language that is widely spoken and important in a number of fields like education, IT, social media, the financial sector, and so on. Language is a tool that helps people communicate with each other and brings them closer. It helps one share their ideas and thoughts with the

world. English is one of the most widely spoken languages and serves as a tool to connect people from different parts of the world. Thus, it is essential to make the learning and teaching of this language essential, especially in countries that still struggle with being fluent in it, such as China. The four important skills to be kept in mind while learning English are listening, speaking, reading, and writing. The advancement in technology, made possible by the Fourth Industrial Revolution, has greatly impacted the teaching and learning of foreign languages. Nguyen and Pham claimed that the use of technology proves to be far more useful in the classroom than in other sectors such as business and trade^[39]. With the introduction of Information and Communication Technology (ICT) in education, language learning has been made far easier when compared to traditional classroom environments. Students are now able to integrate technology to learn at their own pace free from rigid educational systems. They also learn within informal communities through networking and publicly available sources have encouraged easy access to previously unattainable knowledge systems. The enormous AI tools, applying Automatic Speech Recognition (ASR) or Natural Language Processing (NLP), have modified the process of learning a foreign language^[40]. An important development in the field of language learning is the Computer Assisted Language Learning (CALL) system. Educators are beginning to realise the importance of Web 2.0 tools in the education of students. These applications help in engaging students, boosting their confidence, and fostering critical thinking skills. Besides this, there are number of mobile applications, such as Duolingo, that help students learn different languages. They also help in improving grammar, vocabulary, and pronunciation. Foreign language schools use gamification software to help in this regard. There are over 70 million users of this software^[40]. Chatbots have become popular nowadays that facilitate real time conversations. They help monitor the progress of students and identify their weaknesses. Thus, AI has started a revolution in the field of language learning, making it more easily available to users across the world. It has also contributed to the development of quite a few language learning tools like speech recognition and natural language processing that help users develop speaking and writing skills and get instant feedback. In this way, AI plays the role of an interactive tool that helps foster the language-learning skills of individuals.

4.2. Importance of the English language for Chinese students

As already mentioned, the English language plays an important role in uniting different cultures and societies around the world. Institutions and corporations across the world consider the knowledge of English to be a hallmark of knowledge, opening up career opportunities and various other doors for people fluent in it^[41]. In the field of education, English serves as the primary mode of communication in colleges and universities around the world. Universities in non-English speaking countries have started incorporating the teaching of the language in their curriculum which would provide aid to students to conduct research on global ideas and concepts. Apart from helping students increase their chances of a good career, English also plays an important role in democratizing knowledge around the world. The development of digital media and technology has eased access to different resources that use English as the main language of communication. English finds its importance not just in education and economics but in the fields of social and cultural exchanges as well. This is the universal language used in movies, music, and the entertainment industry to reach audiences beyond their respective countries. English is a major force enabling travellers and immigrants to communicate with each other within a new culture and landscape. The wide use of the language in the sectors of transport and tourism builds its place as an accessible means of communication. However, despite these roles and advantages, the dominant usage of English in all sectors of life comes with a few critics of its own.

With the global expansion of English, local languages and cultures seem to be losing their importance and charm in the international context. The dominance of this language has created a pressure on non-

English speakers to learn the language to survive in the modern world. If one fails to do so, there is social stigma attached with them and it leads to the impression of failure in every walk of life. The growing stress attached with the necessity of fitting in according to Western norms has reduced the importance of local languages, dialect, and cultures. However, this issue comes with its own solutions. One solution is to promote multilingualism in classrooms and workspaces. This will ensure that the dominance of English does not overshadow other languages and dialects. According to research, bilingual and multilingual approaches help maintain a proper balance between different languages and ensure the existence of local cultures. With this approach, both English learning and preservation of linguistic diversity can be maintained. The universal characteristic of English also contributes to its role in global policies and international relations. It serves as the main language for communication when formulating treaties and foreign policies. In today's world of globalization, it is essential to have a universal language that will help nations work together in worldly affairs. The use of a language that is understood by the majority population also leads to transparency. It helps people understand the collaboration and working of different nations and their treaties. The use of a common language in these scenarios also contributes towards transparency, enabling a wider audience to understand these complex proceedings. This common language also helps make nations and governments accountable to the people. Thus, English acts as a bridge that connects people from diverse backgrounds, fosters engagement, and leads to the creation of informed citizens who can participate in discussions that shape their future. In the contemporary world, it seems that the role of English as the dominant language is set to expand even further. The spread of the language, development of technologies, and migration of people around the world continue to reconfirm the importance of English in the day-to-day lives of the people. However, the evolution of the language is what is leading to its democratization^[42]. The language is being used increasingly by non-native speakers, thus reducing the claim of native speakers as the sole users of the language. As a result, one can witness the development of an inclusive linguistic framework rather than the language being manipulated by set traditional norms. As English continues to adapt itself to the changing circumstances, its role as a dominant language remains undefeated, fostering cross-cultural dialogue across the world. Along with this, the developments in the field of AI, leading to the creation of translation and easy communication applications, foster communication environments that are inclusive in nature.

5. Conclusion

The integration of Artificial Intelligence (AI) in colleges in China for English education serves as a response to both the limitations of the curricula and the need to establish oneself as a strong competitor in the global market. As discussed throughout this paper, the incorporation of AI in the field of education, especially in the case of language learning, is not just a new technological advancement but also a necessity in the field. By looking at a number of secondary literatures on this theme, this paper has looked at factors that are required to help in the easy learning of the English language in China. The paper explores how AI has proved to be an essential component in this regard. The issue of proficiency in the English language in China can find its solution in the incorporation of AI and its use within the academic field. While the teaching and learning of English remains important in the country, there are profound differences in the way the language is inculcated by different students and the way it is taught to them. Traditional teaching methods often fail to address the needs of diverse students; the teacher-centric methods of teaching give preference to rote memorization over interactive and communicative sessions. Thus, in this regard, AI promises to come up with methods and techniques that cater to individual learners and create a personalized learning experience. The learning systems fostered by AI, such as Intelligent Tutoring Systems (ITS) and chatbots, have contributed significantly towards the acquisition of English by learners. They have helped

users gain confidence in pronunciation, grammar, and writing skills by improving them. These digital technologies cater to the needs of the learners, understand their weaknesses, provide feedback, and reduce the anxieties that come while communicating with humans in real time. As has been shown in this study, students who use AI have proven to perform much better when compared to those who did not take the help of these technologies.

In this regard, it can be said that AI not only improves the practices of teaching-learning but also enhances the learning outcomes of students. AI also helps in preserving the autonomy of the users and providing differentiated instruction methods. In China, classrooms are often overcrowded, making it difficult for teachers to pay attention to each and every student. With AI, learning experiences can be customized according to the needs of the learners. They can also become in charge of their own pace of studying, completing lessons online, and getting feedback. The integration of AI in Chinese academics aligns with the national goals of the country for education. A number of policies by the Government, such as the “Artificial Intelligence Innovation Action Plan for Colleges and Universities”, work towards the integration of AI across educational sectors within the country. Among these sectors, English education is the one that plays the most important role. Thus, universities in China are working hard towards reforming the English curriculum and also using AI to enhance the competency levels of students. Despite these measures and contributions, there are a few limitations of AI integration which are also highlighted by the secondary literature. AI is a tool that cannot function on its own. The proper working of this tool requires careful consideration by authorities and institutions. These may include proper teacher training and infrastructure development. One of the major issues posed by the integration of AI is that of data breaches and privacy concerns. Over-reliance on these digital tools may lead to superficial learning and a reduction in the analytical and critical thinking abilities of students. AI can also not act as a replacement for human educators and teachers when it comes to language learning. The amount of critical thinking and collaborative learning that can take place in a classroom with the help of teachers can never be matched by digital tools. Thus, the role of AI in English learning should not be one of replacing the teachers but emulating their role of acting as mentors and guides for the students. Scholars call for teacher training programs to help them reap the advantages of the digital world and not get replaced by it. The knowledge of AI and essential skills will lead to the creation of a classroom environment that is engaging and interactive. The literature reviewed in this paper also has a tendency to reflect on AI tools that have been developed keeping Western curricula in mind. This may not align with the interests of the Chinese teachers and universities. Thus, there is a need to localize the AI tools by including Chinese English learner data and Mandarin-English translation functions. Along with the support of teachers and university-level practices, digital leadership is also important for stable and ethical governance of AI-based education in China. With the help of organisational creativity through digital leadership, universities in China can gain a stable learning condition. Thus, the incorporation of AI for English education in China is necessary as well as inevitable. AI offers rapid solutions to the challenges of a fast-evolving educational landscape in the country. The responsible use of AI requires efforts and continued research by humans that can help colleges in China reap the complete benefits of AI not just in the field of English language learning but also in transforming the scene of language, culture, and communication in the contemporary world.

Author contributions

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Writing—Original Draft Preparation, Yuping Shao; Writing—Review & Editing, Yuping Shao; Visualization, Yuping Shao; Supervision, Supyan Hussin and Hanita Hanim Ismail; Project Administration, Supyan Hussin and Hanita Hanim Ismail. All authors have read and agreed to the published version of the manuscript.

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Conflict of interest

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