



Exploring the Opportunities and Challenges of AI Technology in College English Teaching

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Abstract. This paper aims to explore the opportunities and challenges of AI technology in College English teaching. Firstly, this article explores the development and evolution of English teaching in Chinese universities in the wake of the 21st century, and the important role played by artificial intelligence in English teaching. Secondly, this article will introduce the application of AI technology in the field of education and explore its potential opportunities in College English teaching. Finally, this article will provide a detailed analysis of the challenges faced by AI technology in College English teaching, particularly exploring the enormous challenges faced by the two main subjects of College English teaching, teachers and students, and discussing the interrelationships and impacts among AI technology, teachers and students.

Keywords: AI technology, College English teaching, Collaborative teaching, autonomous learning.

1 Introduction

The concept of Artificial Intelligence (AI) was first proposed by American scholar John McCarthy and other scientists in 1956. Artificial intelligence typically focuses on creating intelligent computer systems, modeling how the brain works, and signal processing. It involves machine learning platform, language processing, decision-making, speech and visual recognition, and promoting human-computer interaction (Kelly, 2015)^[1]. In recent years, the rapid development of AI technology has brought opportunities to overturn traditional education in the field of education, but it also inevitably brings huge challenges. In higher education, there have always been many problems in College English teaching, such as: teaching in large classes is not conducive to carrying out English teaching activities; The teacher-centered English teaching method often fails to enhance students' interest and enthusiasm in learning; College students generally face problems such as a lack of self-directed learning ability and weak initiative and initiative in learning. The application of AI technology in higher education has provided unprecedented opportunities and new possibilities for students' college English learning. In the *Artificial Intelligence and Life in 2030* released by Stanford University (2016), it was even proposed that: AI is the secret sauce that has enabled instructors, particularly in higher education, to multiply the size of their classrooms by a

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few orders of magnitude—class sizes of a few tens of thousands are not uncommon ^[2]. Regardless of whether such a scenario may seem unrealistic at present, Artificial Intelligence does lead the future development direction for higher education and provide promising solutions for some of the drawbacks in existing College English teaching. However, with the emergence of opportunities, a series of challenges have also come with them, including the transformation of teachers' roles, students' acceptance, and potential problems caused by excessive personalization.

Through this study, this article aims to delve into the opportunities and challenges of AI technology in College English teaching. This article aims to provide valuable insights for educators and researchers by analyzing the latest research results, and promote the rational application of AI technology in College English teaching, providing better support and guidance for students' English acquisition.

2 The Ten-Year Evolution of College English Teaching in China in the 21st Century

Professor Jigang Cai from Fudan University divided the development of College English teaching over the past 30 years into three important stages, the third of which began in the early 21st century. And he pointed out that the external environment of College English teaching in China has undergone significant changes since entering the 21st century ^[3]. With the continuous emergence of new technologies, College English teaching in China has also gone through a development process from Computer-Aided Language Learning (CALL) to Mobile Assisted Language Learning (MALL), and then to the latest Artificial Intelligence in Education (AI-ED).

Computer Assisted Language Learning (CALL) has a significant impact on language learning. The computer-aided foreign language teaching and research in China started in the late 1970s, and there has been rapid development in CALL teaching and research since the 1980s. In 1994, the China's Computer-Assisted Language Professional Committee was established, marking the beginning of China's research on the CALL system. Warschauer (2000a) stated that according to its development process, CALL could evolve into three phases: Structural CALL, Communicative CALL, and Integrative CALL ^[4]. Bax (2003) also proposed a final phase of Integrated CALL which was similar to Warschauer's Integrative CALL. Integrative CALL was regarded that the use of computers was inherent in language learning, and it could be built at the curricular and course level, rather than as an additional component ^[5]. Since 2002, the rapid growth of foreign Open Educational Resources (OER) has penetrated into the academic field of second language learning (Huyen, 2006) ^[6]. Driven by the implementation of Open Educational Resources abroad and China's strategy of "Revitalizing China through Science and Education", ChinaCALL has achieved fruitful results in academic research, resource construction, and talent cultivation. It actively explores various teaching modes such as blended learning, flipped classrooms, Chinese university MOOC, Small Private Online Course (SPOC), and Micro-courses.

Mobile Assisted Language Learning (MALL), also known as Mobile Foreign Language Learning, is an extension and development of Computer Assisted Language

Learning (CALL). Mobile Assisted Language Learning is a formal or informal learning method in which handheld devices are used to learn anytime, anywhere (Kakulska Hulme & Shield, 2008) ^[7]. O'Malley et al. (2003) described MALL as “any sort of learning that happens when the learner is not in a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies.”^[8] The extensive application of Mobile technology has profoundly changed the way students learn English. Nowadays, college students generally use mobile portable devices such as smart phones, tablet computers, portable multimedia players and so on to learn English. There are many mobile device programs or applications for learning languages, such as Duolingo, Superstar Learning APP, Daily English Listening, and Tandem Learning; And some applications are not created for specific classrooms, such as WeChat and QQ; There are also some tools suitable for blended learning, such as Rain Classroom, Ketangpai, and so on. The mentioned above, Duolingo, is a free language learning platform that can enhance vocabulary, grammar, and pronunciation in 28 languages (Usai et al., 2018) ^[9]. Superstar Learning APP is a smart classroom system that is curriculum-centered, teacher-led, and student-centered. It fully connects with the existing hardware of the classroom and covers multiple classroom teaching modes. Teachers can more conveniently distribute teaching activities such as check-in, selection, answering, group teaching, and topic discussions, achieving real-time access to online courses and resources, transforming traditional classrooms into smart classrooms. In addition, “Rain Classroom” is a teaching tool that provides interactive support for blended learning, formative evaluation, and multi-channel classrooms. The “Rain Classroom” with some major intelligent functions, relying on the information technology of Tsinghua University, AI guidance and Big data analysis model application are carried out. Through online high-quality curriculum resources from XuetaangX, teachers can carry out mixed teaching without building classes, and connect National Knowledge Infrastructure (CNKI) and Baidu. One click docking with XuetaangX platform (the third largest MOOC platform in the world), “Rain Classroom” can support and offer massive course selection and national high-quality open course selection. Mobile learning and AI technology have paved the way for ubiquitous learning.

With the progress of Natural Language Processing, Network Learning and technical ability to process large amounts of data, today's Artificial Intelligence plays an increasingly important role in general language research, especially in second language research. The real development from CALL to ICALL has been the language teaching paradigms that have evolved from simple rote learning mechanisms to complex language teaching that provides adaptive and connected learning environments ^[10]. With these advancements, Artificial Intelligence systems have great opportunities to promote customized learning. AI technology will be the trend and direction of foreign language learning in the future. AI will be combined with face-to-face environment to better integrate AI tools, such as Machine translation and virtual reality applications, to achieve the best foreign language learning.

3 The Opportunities of AI Technology in College English Teaching

With the rapid development of artificial intelligence technology, it has brought opportunities for the transformation and innovation of Chinese higher education, as well as empowering College English teaching, providing new possibilities and advantages for students' English acquisition. The opportunities brought by AI technology to College English teaching are reflected in the shift from the teaching mode of teachers' "chalk and talk" and "cramming education" to a "diversified" smart-classroom teaching mode with seeing students as the main learning body, which is specifically reflected in the following key aspects:

Large-scale personalized learning: Large-class teaching in College English is neither conducive to teachers' English teaching activities, nor to students' English learning. Although high-quality education always requires the active participation of human teachers, Artificial Intelligence is expected to provide large-scale personalized education. AI technology can provide personalized learning experiences based on students' language learning needs and foreign language proficiency levels. By analyzing learners' learning data and behavior patterns, AI systems can tailor English teaching contents, provide personalized learning suggestions, and adjust English teaching strategies, based on their learning progress to improve learners' learning outcomes. The latest advancements in AI technology have significantly improved the abilities of AI English speaking teachers, and AI English-speaking teachers have favorable advantages in terms of convenience, cost, pronunciation accuracy, knowledge breadth, and positive feedback. For example, CallAnnie, the latest voice and video robot launched by OpenAI in 2023, is an AI application based on the GPT model, which can communicate with learners in English in the form of real-time Videotelephony or voice real-time connection. In addition, TalkBuddy is an app developed by Chinese developers. Like CallAnnie, it is also an app applying Artificial Intelligence technology based on the GPT model. It can practice speaking English with learners in such a dialogue style as a question-and-answer format, and supports multiple functions such as Chinese and English subtitles and grammar correction.

AI technology can provide various intelligent auxiliary tools. For example, Jukuu English Essay Assessor (www.pigai.org) — the largest English writing platform of China, the commonly-used by over 5000 colleges and universities in China, is an intelligent marking system for English compositions based on corpus Big data, which can effectively improve the efficiency of teachers' marking English compositions, stimulate students' interest in English learning and improve their English writing ability. Its main characteristics are as follows: real-time feedback, supporting process evaluation. It can provide feedback on scores, comments, and sentence-based comments within 1.2 seconds by comparing and analyzing students' compositions with a standard corpus of over 2.3 billion words. Big data analysis shows weak points and uses the outputs to reverse and improve the inputs. The system will analyze a group of students' compositions or multiple versions of a composition, and provide comprehensive personalized diagnostic reports to help teachers analyze students' personalized problems and common mistakes, providing effective data support for school teaching

effectiveness evaluation, teachers' teaching and research, and students' learning. The above intelligent auxiliary tools can provide real-time feedback and correct students' language errors, promoting learners' speaking and writing skills. Natural Language Processing, specifically when combined with Machine Learning and Crowdsourcing, has boosted online learning and enabled teachers to multiply the size of their classrooms while meeting individual students' learning needs and styles [2]. With the support of AI technology, large-scale personalized learning is expected to be achieved, which effectively solves the various drawbacks brought about by the long-standing large-class teaching in China's College English teaching.

Deep collaborative self-directed learning: The widely-recognized definition in the domestic academic community in China is that students' self-directed learning is a manifestation of their ability to learn, want to learn, be able to learn, and persist in learning. It is a process of learning that is detached from the approach of "teacher-centered learning", and its characteristics include students' initiative, the effectiveness of the self-directed learning process and results, and relative independence [11]. Domestic scholar Jinfen Xu (2007) [12] proposed that for Chinese learners, English autonomous learning ability includes five aspects: understanding teaching goals and requirements, formulating learning goals and plans, effectively using learning strategies, monitoring the effect of learning strategies, and monitoring and evaluating the English learning process. To sum up, autonomous learning ability includes not only learners' internal factors (such as goals, strategies, initiative, individual efforts and sense of learning responsibility), but also external factors (such as external environment, social communication, cooperative learning).

AI technology provides students with opportunities for autonomous learning. Through English learning platforms of Artificial Intelligence, autonomous learning applications, and virtual teachers' assistants, language learners can fully utilize their initiative, consciously and purposefully choose suitable learning resources, and learn at their own pace. This mode of autonomous learning can in turn stimulate students' learning motivation and autonomy, and improve the effectiveness and results of learning. Moreover, the Artificial Intelligence English learning platform built with AI technology can achieve comprehensive collection and management of English teaching information, and the vast teaching database it can establish provides powerful support for subsequent autonomous learning.

Artificial Intelligence technology can help language learners engage in deep collaborative autonomous learning. In the process of English autonomous learning, recent advances in Artificial Intelligence technologies such as cloud computing and speech recognition can be utilized to deeply analyze English communication behavior and English vocabulary learning traditionally-focused in the teaching process. Through on-site testing and analysis of learners' English proficiency, one can recognize their shortcomings through repeatedly practising English, and adjust their English learning strategies in a timely manner. Students can consult and make reference to the massive data analysis results to develop scientific learning plans and intervene in their own learning behavior [13]. The effective application of Artificial Intelligence technology can assist learners in conducting deep autonomous learning; Meanwhile, AI technology can break geographical and cultural limitations and provide learners with opportunities

for cross-cultural learning. Through online collaboration platforms, virtual communication tools, and language communication robots, students can communicate and collaborate with learning partners from different cultural backgrounds, helping them build a deep collaborative autonomous learning model.

Diversified and intelligent teaching innovation: Teachers can use Artificial Intelligence technology to integrate and present diverse learning resources, for instance online courses, learning videos, corpora, and learning games. Students can use various forms of learning resources to learn English in more diverse and abundant ways, increasing their interest and participation in learning. AI intelligent robots may help students evolve into active learners and become independent individuals with autonomous consciousness. They can participate in socialized interactions with their teachers and other language learners, and form a diverse interactive structure of a “learning community” with their educators and learning partners to promote mutual development. A “learning community” refers to a group composed of learners and assistants, which uses common learning tasks as a carrier and aims to promote the development of its members. Through communication, exchange, and sharing of learning resources between each other, it exerts the role of group motivation and achieves mutual promotion [14]. At the same time, in the diverse interactive structure of the “learning community”, AI partners and teachers are in such a relationship as true facilitators, as well as individuals with equal thinking, emotions, and abilities. AI partners possess the same intelligence and creativity as teachers, and their work forms include collaborative lesson-preparation for teachers, listening to evaluation teachers, the testee for educational experimental, and so on and so forth. Diversified and intelligent AI tools can better analyze and interpret learners’ behavior patterns of their language acquisition, while allowing teachers more time and energy to carry out creative teaching work, and achieve co-evolution in the multiple interactive structure of the “learning community”.

4 The Challenge of AI Technology in College English Teaching

AI technology also brings a myriad of challenges and limitations to China’s College English teaching. The following are some key challenges of AI technology in College English teaching:

The improvement of teachers’ digital literacy and the transformation of their roles: Professor Michael Halliday (2006) of the University of Sydney pointed out that great changes have taken place in English teaching in China. The influencing factors can be summarized into two aspects: technical and social factors. He also believed that technological innovation has put forward higher requirements for teachers [16]. With the rapid development of AI technology, higher and fresh new requirements are put forward for teachers’ technological and digital literacy. Teachers need to adapt to and master the application of AI technology, understand how to use AI technology to support students’ language acquisition, and how to effectively interact with AI systems in the teaching process, so as to help learners improve their foreign language learning ability. These not only require teachers to accelerate the improvement of their digital literacy to enhance their mastery and application ability of AI technology, but also

require teachers to transform their traditional roles in teaching and become supporters, supervisors, mentors, and evaluators in their students' language learning. Seo et al. (2021) have demonstrated the complex impact of AI on learner-instructor interaction in online learning. In their research, instructors perceive more meaningful interaction, make more possible just-in-time personalized support and help instructors become more aware of students' needs [17]. Although AI technology can provide automated evaluation and feedback, it still remains a challenge ensuring teaching quality and effectively evaluating students' English proficiency. Teachers need to balance the advantages and limitations of using AI technology for automatic assessment to ensure accurate assessment of students' language proficiency and abilities, and to provide personalized learning support for students.

Cultivation of students' autonomous learning ability: if learners lack the internal factors of autonomous learning ability, such as setting up goals, possessing learning strategies, initiative, individual efforts and sense of learning responsibility, then the role of external factors such as social environment and cooperative learning will also be weakened and worn down. Promoting students' psychological motivation for autonomous learning is the key to guiding students' autonomous learning [18]. Currently, there is a widespread problem of insufficient internal motivation for autonomous learning among college students. In specific teaching practices, how to combine the application of AI technology with learners' autonomous learning ability in order to achieve harmonious development is an inevitable challenge that AI technology will face in the future development. Halliday once pointed out that investigating the actual needs of university graduates to use English is of great significance for current English teaching in Chinese universities [8]; Educators can assist learners in forming internal motivations for autonomous learning by understanding their actual use of English after graduation and entering their workplaces. Therefore, how to design and establish a comprehensive AI evaluation system and effective teaching management mechanism, as well as how to improve students' English autonomous learning level and promote their internal motivations such as driving their motivation and cultivating their interest, are all urgent challenges that need to be faced and solved.

Collaborative teaching of AI and human-machine collaboration between teachers and students: In College English teaching, there is still a challenge of balancing AI with human-machine collaboration between teachers and students. Overreliance on AI technology may weaken students' autonomous learning and their critical thinking abilities. Therefore, how to achieve human-machine balance in collaborative teaching requires in-depth consideration and resolution.

On the basis of human-computer interaction, human-computer collaboration emphasizes that teachers should always take center stage and grasp the teaching process from a macro perspective; Human-computer integration emphasizes a bi-directional closed-loop system formed by the interaction of humans, machines, and the environment [19]. Therefore, teachers need to understand how AI operates and how data is processed in order to identify and be aware of potential biases and errors, in order to macro regulate [15]. At the same time, teachers also need to ensure that AI Natural Language Processing technology is combined with traditional language teaching methods and learning activities to promote learners to have a better English learning

experience and comprehensive English ability training, and the role of teachers in providing learners with professional guidance and evaluation, humanistic motivation and guidance is still crucial. Educators should educate students on how to correctly use and interpret the results of AI technology, encourage students to maintain their critical thinking and self-directed learning abilities, and ultimately form a “AI+teachers+students” collaborative teaching system where AI interacts with teachers and students.

Of course, with the increasing application of AI technology in College English teaching, the other challenges such as ethical and privacy should also be considered and addressed. By adhering to ethical and privacy principles, teachers should ensure that when applying AI technology in College English teaching, students’ rights and privacy are protected and hence AI will be applied to the fullest. When using AI technology for students’ learning analysis and their personalized support, it is necessary to ensure legal and transparent data collection and use. Students’ personal data should be protected and comply with appropriate privacy regulations and policies. Educators should clearly explain the purpose and methods of the data collection, and obtain informed consent from students and their parents.

5 Conclusion

AI technology has enormous opportunities in College English teaching in Chinese universities. Through large-scale personalized learning, deep self-directed learning, and AI intelligent teaching innovation, it can help solve long-standing problems in College English teaching, such as large class teaching, the cramming English teaching method that focuses on imparting knowledge, and students’ self-learning insufficiency. AI technology can integrate traditional teaching methods of College English and simultaneously it can create a new ecosystem of human-machine collaborative teaching in College English teaching. Teachers can combine technologies such as online learning platforms, virtual teaching assistants, and real-time speech recognition to provide personalized learning support for students. They can use learning analysis tools and students’ data to understand their learning habits and difficulties, and guide and promote learners’ interaction and cooperation in blended College English classrooms. They can help students choose suitable learning methods, educational resources, and technologies, and customize personalized learning plans.

On the other hand, AI technology has also brought challenges and limitations to the teaching and learning of College English, such as how to improve teachers’ digital literacy and their technical ability, understand the latest application of AI technology, and how to effectively combine external factors such as AI evaluation system and teaching management mechanism with internal factors such as students’ interest cultivation and learning motivation through AI technology, in order to cultivate students’ learning autonomy and stimulate their learning motivation, to enhance their English self-learning ability and promote the development of their language skills as well. At the same time, excessive reliance on AI technology may weaken students’ autonomous learning ability and critical thinking ability. Although AI systems can provide learning

support and feedback, teachers still play a crucial role in providing guidance and motivation. Teachers and educators should educate students on how to correctly use and interpret the results of AI technology, and encourage them to maintain critical thinking and self-directed learning abilities. Therefore, how to balance the relationship between AI technology, teachers, and students in College English teaching, in order to achieve human-machine interaction, coordination, and balance in teaching and learning.

Looking ahead, this article can foresee the continuous development and application of AI technology in College English teaching. With the progress and innovation of technology, the “AI+Teachers+Students” model will become more humanized, intelligent, and interactive, which can better meet the learning needs of students and achieve the value and goals of education. Through further research and practice, teachers and students will continuously optimize the application of AI technology in College English teaching and learning, with its providing better support and promotion for students’ English acquisition.

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