Research on the Teaching Mode of College English Based on Artificial Intelligence

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Abstract. In recent years, the breakthroughs of AI have recently occurred in the fields of natural language processing, image recognition and so on. How to introduce AI technology into college English teaching and efficiently integrate with college English “teaching” and “learning” has not yet been fully studied. The AI technologies, especially in NLP, provide the possibilities of enhancing college English teaching qualities and build the new college English teaching mode. Studies on the efficient connection of teaching and learning concerning the applying of AI are scarcely found. This thesis analyses the integration on of AI and college English teaching, especially the feedback of self-regulated learning evaluation and try to probe new teaching modes against the AI backdrop. Related researches have demonstrated that it will provide new ideas and entry points for the reform of the current college English teaching mode, and is of great significance for achieving the goals of college English teaching.

1. Introduction
Since the Dartmouth Conference in 1956 first proposed the term AI, the research and development of AI has experienced many ups and downs. In recent years, AI technology has achieved breakthroughs in many research fields. In 1998, LeCun (the winner of the Turing Award in 2019) applied Convolutional Neural Networks (CNN) to handwritten letter recognition and was successful. In this research, LeCun designed LeNet, known as the originator of CNN. Starting with LeNet, the theories of CNN and Deep Learning (DL) have gradually improved and have begun to play an important role in the application field. In 2012, another Turing Award winner, Hiton's student Alex, designed AlexNet based on CNN, which greatly refreshed the original record in the ImageNet competition and inspired a worldwide deep learning research boom. Starting with this, a new round of AI technology boom based on CNN, DL, etc. has achieved breakthrough progress in natural language processing, image recognition and other fields, which has the possibility and value of moving from the laboratory to the specific application.

In the AI development environment, how to apply AI technology to education has been given great attention both at home and abroad. In 2019, the Ministry of Education put forward requirements for the integration, application, and promotion of artificial intelligence technology and the education industry. This article conducts a preliminary analysis on the combination of AI technology and college English teaching, and explores the college English teaching model under the AI background based on the research on the possibility of combining related AI technology with college English teaching.
2. Analysis of the Existing College English Teaching Mode
The teaching mode is established under the guidance of certain teaching theories. It is a relatively stable teaching activity framework for specific teaching content and teaching objects. At present, multimedia technology is widely used in foreign language teaching in various universities in my country. In the current college English teaching, multimedia technology is very conducive to "listening" teaching, and it also provides certain support for teaching methods such as text explanations and classroom exercises. However, from the perspective of the teaching goal of "listening, listening, reading, writing" ability training, the existing teaching model still has great limitations, which are mainly reflected in: the current college English teaching is teacher-centred, and the teacher is responsible for the design, implementation, and Evaluation, and because the teaching class is large and the number of students is large, it is difficult for teachers to control the situation of each student, especially when language learning requires full practice, there is no feedback evaluation on the practice, or the feedback evaluation is not detailed, and the feedback evaluation is delayed. In college English teaching, how to prompt students to complete a large number of exercises required for language learning under the premise of limited teacher manpower, and to complete the feedback evaluation of these exercises is an urgent need for research.

In 2017, the “New Generation Artificial Intelligence Development Plan” clearly stated: “Using intelligent technology to accelerate the reform of talent training models and teaching methods, and building a new education system that includes intelligent learning and interactive learning”, “Establishing a learner-cantered Educational environment, providing precise push education services”. In foreign countries, the application of AI in education has also received great attention. Stanford University clearly stated: “Although quality education always requires the active participation of human teachers, AI can be used to strengthen education at all levels, especially large-scale personalization. Education”. How to combine the booming new AI technology with existing face-to-face classroom teaching is worth studying? This is also a question of how AI technology can be implemented and better integrated with education. The application of AI technology to college English teaching can be roughly divided into three sub-questions: which teaching links can introduce AI technology, what role does AI play in the new model, and how to evaluate the quality of teaching activities.

3. AI Technology That can be Used for College English Teaching
To answer the question of which links in college English teaching can introduce AI technology, we must first understand what problems AI technology can solve. At present, AI technology is booming. This article conducts preliminary analysis and research on AI technology that may play a role in college English teaching. At present, the major impact on college English teaching is the NLP (Natural Language Processing) research branch in AI technology, and NLP itself contains dozens of small branches. The application of NLP in education, such as the application in essay scoring, the combination of computer programs to enhance the education process has attracted more and more attention in recent years. From the perspective of the abilities involved in college English teaching, this article makes a preliminary summary and analysis of the possibility of NLP in college English teaching.

3.1. NLP Technology Related to “Listening and Speak in” Capabilities
At present, research fields related to NLP technology and "listening and speaking" capabilities include but are not limited to: Voice Recognition, Speech Recognition, Speaker Recognition, Lip-reading, Text-To-Speech, Speech Synthesis, etc. Based on speech segmentation, pronunciation modelling, vowel and consonant distinction, language modelling and other technologies, there are more mature solutions for speech recognition, synthesis, conversion and other functions, and they have been applied to many softwares, such as We-chat and other software. Commonly used voice input. But these functions have some mismatches in requirements relative to the functions required for college English teaching.

The cultivation of "listening and speaking" abilities has always been a difficulty in college English teaching. There are two main reasons: one is the inability to produce a real immersive English environment, and the students are not trained enough in "listening" and "speaking"; the other is the current college English teaching Conditions, even if students have exercises after class, if these exercises...
do not have correct and timely evaluation feedback, students may lose interest in continuing to learn. This is also an important reason why there are many "dumb" and "deaf" English in college English teaching, and the classroom atmosphere is difficult to be active.

3.2. NLP Technology Related to Read and Write capabilities
At present, in college English teaching, most students think that "reading" is relatively easy but "writing" is very difficult. The reason is that "writing" ability involves word usage and collocation, sentence composition and syntactic correctness, whether paragraph semantics are aggregated, and the overall structure of the article is reasonable. This requires a lot of practice, as well as more detailed feedback on these exercises. But judging from the current teacher-student ratio in college English teaching, it is obviously difficult.

3.3. Other AI Technologies Related to University Teaching
In addition to the above NLP technology, there are many AI technologies that can be used not only for college English teaching, but also for teaching other subjects. For example, AI robots based on question answering technology can answer some students' professional knowledge questions after sufficient domain knowledge training; for example, based on paragraph and text understanding technologies, certain AI entities can be trained after sufficient domain knowledge training. In the initial stage of the course, AI entities provide students with guidance and navigation for this subject or this stage of learning, and help students realize data collection during online learning; statistical-based AI entities can also establish a complete personal learning mode for students to provide personalized learning navigation service.

In general, AI technology is booming, and its limits are far from known. AI technology can be considered in the cultivation of college English "listening, speaking, reading, and writing" ability. It can be said that the application of AI technology in college English teaching has just begun, and there is a lot of work to be explored, excavated and realized.

4. College English Teaching Mode under the Background of AI
Compared with traditional classroom teaching, after the introduction of AI technology, the roles of teachers and students in the college English teaching model will change dramatically, and the tasks they undertake will also change accordingly. Traditional classroom teaching follows the mode of teaching, understanding, consolidation, practice, and inspection, and it progresses back and forth. Teachers are the center of teaching activities. In the current college English teaching, this model is increasingly difficult to stimulate students' interest in learning. Although there are many research reports on flipped classrooms, from the current college English teaching practice, it is still very difficult to form a student-centered flipped classroom. The main difficulty is that although teachers recognize the student-centred learning mode, but the students lacked understanding of it. How to motivate students to change from passive learning to active learning is an overall educational reform task, which can not only be completed by a certain school or through a course or a teacher alone. In addition, the current common teaching model in teaching reform requires students and teachers to become collaborators, but considering the constraints of the teacher-student ratio in Chinese universities, it is very difficult to achieve the conditions for the implementation of this "cooperative" teaching model. Therefore, this article explores the college English teaching model based on AI technology.

In college English teaching in the context of AI, teaching activities or learning activities are no longer just the interaction between teachers and students. After the introduction of AI technology, a new AI-based role mode for college English teaching will be formed, as shown in Figure 1. In Figure 1, a new role is introduced between teachers and students: AI entities. These AI entities are all kinds of intelligent software that assist students in learning activities such as listening, speaking, reading, and writing. Teachers can use these AI entities to grasp the learning status of students, and students can also use these AI entities to understand their own learning status. The teaching mode shown in Figure 1 requires certain implementation conditions: Students and teachers must be able to access the Internet; Teachers and
students must have terminals that can use AI software; there must be AI software that supports “listening, listening, reading, and writing” exercises. Judging from the current development of AI technology and the popularization of smart phones and 4G networks, AI-based college English teaching has the conditions for implementation.

Through the introduction of AI entities, the tasks that teachers and students need to undertake in each teaching stage have undergone great changes. Over the years, historical data of students at various learning stages and relevant levels of the profession, corresponding teaching activities, guidance and final teaching adopted by teachers. The results are saved in the database, which provides good support for the operation of AI entities. Compared with the traditional teaching model, the guidance and evaluation of many student learning activities can be initially completed by the AI entity, and then further refined by the teacher in charge. This greatly reduces the workload of teachers and greatly eases the current teachers in college English teaching. Health ratio constraints. After the introduction of AI entities, the tasks undertaken by teachers and students have also changed dramatically. Due to the intervention of AI entities, students can choose individual courses according to their own conditions, thereby achieving flexible teaching goal setting; in the learning process, they can make full use of various online and offline resources for targeted learning with AI. The tasks undertaken by teachers have also changed from relying solely on individual ability to guide students, to the primary guidance being completed by AI entities, and teachers will complete more advanced guidance and answering questions in face-to-face classrooms, such as writing exercises, morphology, syntax, etc. The AI entity completes the feedback and correction of errors in this area, while the teacher is responsible for guiding questions such as semantics and text structure, and answering students’ questions.

The teaching task assessment is shown in Figure 2. Compared with the traditional final exam, where the final exam results are determined, or the current final exam accounts for the majority and students' usual performance (mainly classroom performance, homework quality, etc.) accounts for a small portion, after the introduction of AI entities, the final assessment is procedural. The proportion of evaluation can be greatly increased. In process evaluation, you can calculate whether students are really engaged in learning based on various status indicators. These indicators are not only ordinary homework or classroom performance, which is a low-differentiation indicator, but a personalized indicator, such as: The number of questions and answers between students and AI entities, the number of questions and answers between students and teachers, the number of data inquiries, data reading time and reading process, the number of submissions of exercises such as listening, speaking, reading, and writing.
It can be seen from Figure 1 and Figure 2 that after the introduction of AI entities, college English teaching is no longer just the relationship between teachers and students, but the relationship between teachers, AI entities and students. The original one-to-many situation of teachers becomes a teacher + N teaching aid AI entities corresponding to N students, which breaks through the current teacher-student ratio constraint in college English teaching and provides a way to stimulate students' interest in learning.

5. Conclusion
The development of language ability is a gradual and persistent process that requires a lot of practice. The main difficulty of college English teaching lies in how to stimulate students' enthusiasm for autonomous learning and how to break through the constraints of teacher-student ratio to provide students with good evaluation feedback. The introduction of AI technology provides new ideas and entry points for changing the current college English teaching model, which is of great significance for improving students' listening, speaking, reading, and writing skills and achieving college English teaching goals. This article studies the college English teaching model under the background of AI. Based on the analysis of the AI technology related to the "listening, speaking, reading, and writing" ability of college English teaching, it explores the changes in the college English teaching model after the introduction of AI technology. At present, the development of related AI technology and the combination of AI technology and education are still in the preliminary stage, and more in-depth research needs to be followed up.

ACKNOWLEDGMENTS
This article is supported by the Youth Fund Project of Wuhan Donghu Academy of Sciences in 2019, "Research on Product Recommendation Based on Web Space-Time Customer Behavior Trajectory" < No: 2019dhzk006>.

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