Research on Adopting Artificial Intelligence Technology to Improve Effectiveness of Vocational College English Learning

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Abstract. In the traditional English learning mode of vocational college, teachers and students spend a lot of time on the basic knowledge of English. Due to the singularity of teaching methods and the lack of effective student self-learning platform, many students consider that English learning is boring and the actual learning effect is poor[1-2]. As an emerging edge discipline, artificial intelligence covers a series of topics such as image recognition, pattern recognition, robotics, natural language understanding and expert systems. The simulation and application of human language intelligence is an essential progress of artificial intelligence technology[3]. This paper will analyze the connotation of artificial intelligence technology and its principles of natural language understanding, and sort out the application advantages of artificial intelligence in education field. Finally, it puts forward practical measures of adopting artificial intelligence tools in input and output stages of English language learning[4-5].

Keywords: Artificial Intelligence, Natural Language Understanding, English Learning Effectiveness

1. Problems in traditional vocational college English learning

1.1. Teaching methods of vocational college English are not satisfactory
Affected by traditional education, textbook-centered mode is common in vocational college English teaching. English learning is mainly based on teacher’s lectures and students’ listening and recording. Teachers spend much time in class explaining vocabulary, grammar and key sentence patterns. Due to the lack of interaction in class, students feel that English learning is boring and complicated, and it is impossible to continue.

1.2. Most students’ learning purpose is limited to exam
From the external environment, there has been a long-term tendency to test-oriented education in our education system. From the elementary and middle school stage of compulsory education to the higher education stage, whether it is entrance examinations, job interviews or promotion of professional titles, English is a compulsory subject and cannot be avoided. Many students think that learning English is just to pass the grade test, to get a graduation certificate, to facilitate job hunting, and they will not use it at work. As a result, their English learning are trapped in memorizing words and making questions
in order to pass various English exams. They are in a quagmire and cannot extricate themselves from it. Most of the students ignore that the real purpose of learning English is communication. Examination is only a tool to test the level of learning.

1.3. The foundation of English learners is not uniform
The "starting point" of vocational college students’ English learning are inconsistent. In the middle school stage, English is a weak subject for some of them, and their English scores in high school are not very good. Besides, some students make temporary effort for English learning in order to cope with the exam, resulting in their inability to master the basic knowledge of English. And there are great differences in learning initiative among individual students. Therefore, in vocational college English classes, some students will not understand or keep up. Some students cannot understand teacher’s explanation or speak English correctly, and then they lose interest and motivation in learning English. This situation urgently needs to be reversed through personalized experiential learning.

1.4. The teaching infrastructure is lagging behind, and the oral English teaching is hampered.
From the very beginning, English learning should pay attention to the mastery of pronunciation and intonation. If the pronunciation, intonation, and stress of English are not standard enough, it will directly affect the improvement of students' listening and speaking skills, which will hinder their normal communication. However, in the public English teaching of vocational colleges, there is a general situation that audio-visual teaching equipment cannot satisfy individualized learning, which creates difficulties for the cultivation of students’ listening and speaking skills in English learning.

1.5 English textbooks and learning materials are not updated in time
At present, the textbooks and learning materials used in vocational college English courses are seriously academic and out of touch with the social fashion and actual life of the British and American countries. Teachers focus on analyzing the grammar and sentence patterns of texts in class. Vocational college English teachers also set questions to test students’ mastery of vocabulary and grammar, ignoring the reading and learning of English originals and real life materials, which eventually leads to students’ insufficient ability of reading English books, newspapers, and writing English articles.

2. The connotation of artificial intelligence and its progress in the field of natural language understanding

2.1. The connotation of artificial intelligence
Artificial Intelligence (Artificial Intelligence, AI) is a branch of computer science that involves the research, design and application of intelligent machines. The goal of AI research is to explore the use of machines to imitate and perform certain intellectual functions of the human brain, such as judgment, reasoning, proof, recognition, perception, understanding, design, thinking, etc., and to develop related theories and technologies. Research in this field including robots, language recognition, image recognition, natural language processing and expert systems. Professor Winston of the Massachusetts Institute of Technology put forward: "Artificial intelligence is to explore how to make computers capable of doing tasks that only humans could do in the past."

2.2. Advances of artificial intelligence technology in natural language understanding
The use of computers for natural language analysis is a cross-discipline of linguistics and computer science, which is called "computational linguistics" or "natural language processing" in academia. If the program is understood as "data structure + algorithm", then natural language processing can be understood analogously as "linguistic category + computational model". Among them, the linguistic category refers to the linguistic concepts and standards defined by linguists (such as words, parts of speech, grammar, semantic roles, text structure, etc.). Most of the tasks of natural language processing come from this. In terms of computational model research, The algorithms for natural language
understanding are usually developed by computer scientists, and there are usually two approaches: "rule method" and "statistical method". In view of the fact that natural language produced by human beings due to the need of communication is essentially a symbolic system, and its rules and reasoning characteristics are distinct, so the early research on natural language processing mainly adopts the rule method. However, human language is not a formal language after all. The rules of language are often quite vague. It is not easy to formulate unified rules. On the other hand, the complexity of natural language makes it difficult for rules to cover all language phenomena. So the rule method, based on rationality, makes the research of natural language understanding stay in the small-scale experimental stage for a long time. Until the construction of large-scale corpus and the popularity of statistical machine learning methods, the statistical method saves a lot of the burden of manual preparation of rules and its superiority in model generation has also been reflected. The simulation research of human language intelligence has gradually moved towards the road of practicality. Professor Yu Shiwen believes that natural language understanding has always been a fascinating and challenging subject in artificial intelligence science. Therefore, in order to widely apply artificial intelligence technology, the most important thing is to explore and study the connection between natural language systems and computer language systems and the conversion between the two. The basic application mode of artificial intelligence technology in natural language understanding can be seen figure 1.

![Figure 1](image)

**Figure 1.** Application mode of artificial intelligence technology in natural language understanding.

3. Advantages of artificial intelligence technology in education

3.1 Application of artificial intelligence technology

At present, China has launched the development of artificial intelligence resource platforms in many fields. For example, Baidu is committed to autonomous driving in the field of unmanned driving, and Ali is committed to the field of city brain and transportation, which has the most extensive impact on humans [7]. And the application of artificial intelligence technology in education, which is the cradle of science and technology, has also made substantial progress.

3.2 Artificial intelligence technology in education

The advantages of artificial intelligence technology in the field of education and learning are reflected in that it makes our education and learning extraordinarily convenient. This convenience is reflected in the convenience of learning methods and the convenient acquisition of learning resources. According to the intelligent data platform, learning can be carried out anytime and anywhere. When students encounter problems in homework, they can find the answers quickly by searching the Internet. In addition, artificial intelligence-based virtual reality technology can provide effective teaching scenarios and teaching methods. In the course that needs to present real scenes, students can see or
even feel the actual scenes by using intelligent virtual reality technology, so as to facilitate their understanding of previously unimaginable knowledge points.

Secondly, artificial intelligence can make education and learning more personalized. Comenius proposed the "class teaching system", which allows everyone to come to school, but it also leads to the problem of not being able to teach students in accordance with their aptitude. Now artificial intelligence can solve this problem. Through big data analysis before class, teachers can easily diagnose everyone’s learning needs, learning basis, learning status, and give learning menus to achieve personalized teaching content [8]. During teaching in class, with the help of artificial intelligence tools, teachers and students can interact with each other in real-time and all-round to achieve personalized teaching methods. At the same time, through the artificial intelligence system, teachers can promptly discover the problems of students’ knowledge and teaching. Combining the learning effects, teachers can make targeted evaluations for students to achieve personalized teaching feedback. After class, students can use the intelligent learning platform to review the knowledge, reappearing teaching process, analyzing test data, screening learning problems and achieving individualized extracurricular learning.

Finally, artificial intelligence can improve the level of learning. With the help of artificial intelligence technology, learners can skip simple repetitive memorization, and enter a higher field of innovative learning. The basic knowledge for memorizing in the learning process can be done by smart tools, and tasks corresponding to these fields will also be replaced by smart robots [9]. In the future, people will do creative learning, cultivate their innovative ability and work reflective ability. At the same time in the field of education, humans can use the artificial intelligence expert system to model the knowledge and excellent experience of various experts. Artificial intelligence can also calculate many skilled human activities or repetitive labor projects into a fixed model, which can be automatically operated by computers. Obviously, AI technology will free human beings from tedious basic work.

4. Artificial intelligence tools can improve the effectiveness of English learning

4.1. Functions for understanding English

In the English input learning stage, artificial intelligence tools can be used as a natural language understanding and processing system that students can easily use. Through the system, students can conduct interactive listening training and follow-up exercises. The intelligent tools will automatically pass through the voice recognition system. Analyze the audio information input by students in the form of natural language, and provide feedback results for students’ reading in a timely manner like a teacher, solve the problem of intonation and pitch of language learning in a technical form, so that students can avoid errors in the first time. The negative inhibition of English learning caused by pronunciation.

4.2. Functions for English reading

In the stage of English reading and vocabulary improvement, an artificial intelligence learning tool similar to the Mint Reading APP can simulate the role of a teacher. By testing each student's existing vocabulary, text comprehension, reading preferences and reading habits, Each student intelligently provides reading books in line with his English learning foundation and hobbies, so that students' English learning will always run on a scientific and effective track, which will have substantial significance for enhancing their learning interest and effect.

4.3. Functions for English translation

In terms of the translation output of English learning, intelligent machine translation technology, an important branch of artificial intelligence, has made great breakthroughs. However, in terms of the existing machine translation achievements, the translation quality of the machine translation system is far from reaching a mature level; to effectively improve the quality of machine translation, we must
first analyze the structural problems of the language itself rather than just improve the program design. Moreover, when humans have not thoroughly studied the language recognition and logical reconstruction functions of the human brain, it is unrealistic for the quality of machine translation to exceed the human brain in the short term. With the current progress in machine translation, English learners should abandon suspicion and actively take advantage of the speed, richness, and comparability of machine translation tools to improve the effect of translation works.

4.4. Functions for English teaching
In addition to the effectiveness of English classroom teaching, artificial intelligence monitoring technology can track and record the expressions and behaviors of students through the facial recognition system, and analyze each student's attention to the content of classroom teaching through the data of "expression contrast curve" The degree of concentration and emotional state, from which teachers can find teaching points that are attractive to students and teaching difficulties that are generally ineffective, and then adjust teaching content and methods to improve teaching quality.

4.5. Functions for English test
In terms of English teaching test, artificial intelligence software uses intelligent recognition technology and natural language processing technology to have practical applications in test proposition, English listening and speaking test, test paper review and examination room setting arrangement, etc. The intelligent marking system can extract teacher experts The scoring data model can automatically review and score students' subjective questions in terms of sentence grammar similarity that is more accurate than human.

5. Conclusion
In the era of deepening and extensive development of artificial intelligence technology, China's traditional vocational college English teaching mode and student learning mode will have substantial changes, especially in terms of data acquisition, speech recognition, data statistics, machine translation, etc. English learning will change to be more intelligent and convenient. Vocational college English learning will incorporate multiple intelligent elements such as intelligent reading, voice evaluation, digital classrooms and intelligent evaluation. With the advancement of natural language processing technology and deep learning algorithms, students’ English learning effectiveness will be greatly improved.

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