Applying Artificial Intelligence to College English Teaching

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ABSTRACT

With the rapid development of technology, the application of artificial intelligence in the field of education has received widespread attention, especially playing an increasingly important role in English teaching. This study focuses on 120 sophomore year non-English major students from a university in Xi'an, and conducts a six-month comparative experiment by an intelligent platform to test the specific contribution of artificial intelligence technology to improving English listening, speaking, reading, and writing abilities. This intelligent system adopts adaptive learning strategies and real-time feedback mechanisms, which can accurately analyze learners' learning habits and weaknesses, and provide customized learning materials accordingly. The results have showed that students who used artificial intelligence assisted English learning showed significant improvements in listening, speaking, reading, and writing scores, while the control group who did not use the intelligent system did not show significant improvements in these four scores. In addition, the study has also found that the system can effectively reduce the workload of teachers and significantly enhance students' learning interest and motivation. Data analysis shows that the application of artificial intelligence technology not only improves the efficiency of language learning, but also optimizes the allocation of teaching resources, proving its practical feasibility and teaching effectiveness in the field of education. Starting with artificial intelligence technology, this article deeply explores the future development potential and challenges of this field, providing theoretical support and empirical basis for English teaching practice.

Keywords: *Artificial intelligence, English teaching, Improvement of learning ability, Intelligent system, Adaptive learning strategy, Real-time feedback mechanism, Optimization of educational resources.*

1. INTRODUCTION

In the era of rapid development of information technology, the application of artificial intelligence technology (AI) has penetrated into various industries, and the education sector is no exception. English, as an internationally recognized language, is an important bridge connecting economic, technological, and cultural exchanges between different countries and regions. Therefore, English teaching has always been highly concerned. However, the traditional English teaching model often has some problems, such as insufficient teaching resources, single learning methods, and inability to meet personalized needs. In this context, the introduction of artificial intelligence technology has provided new possibilities for English teaching. Through artificial intelligence technology, English teaching can be more tailored to students' needs and actual situations, achieving personalized learning and precise evaluation. The multidimensional and adaptive characteristics of artificial intelligence technology also make the learning process smoother and more efficient, greatly enhancing the interactivity, fun, and relevance of teaching. At the same time, the application of virtual reality technology and online interactive platforms helps students to be exposed to multi-dimensional real language environments, providing more diversified channels and support for the mastery of language knowledge and the practice of language skills. On the other hand, the application of artificial intelligence can also free teachers from tedious and repetitive teaching tasks, allowing them to devote their time and energy to higher-level teaching design and research.

2. ANALYSIS OF THE CURRENT SITUATION OF ENGLISH TEACHING

2.1 Challenges of Traditional English Teaching

In today's rapidly developing artificial intelligence technology, traditional college English teaching methods are facing unprecedented challenges. As a globally recognized language, the teaching effectiveness of English directly affects students' future academic research and international communication abilities. Traditional English teaching is usually conducted under the guidance of teachers, with textbooks as the core content in the classroom, focusing on grammar explanation and vocabulary memorization. Students improve their language application skills through extensive repetitive training, such as memorizing vocabulary and reading short texts aloud. However, the learning benefits under this model are limited, making it difficult to meet students' personalized learning needs and cultivate their innovative abilities[1]. Research has shown that English language learning is not just about piling up words and grammar, but more importantly, being able to understand and apply language in different contexts. On the other hand, with the development of technology, students' learning and life in school have been integrated with various technological tools. Traditional teaching modes and classroom activities lacking technological empowerment are difficult to truly stimulate students' interest in learning, resulting in low learning motivation, low participation in classroom activities, and poor learning outcomes. In traditional teaching models, teachers are the main disseminators of knowledge and organizers of classroom activities, but they find it difficult to make timely and accurate judgments and feedback on students' acceptance of knowledge and the effectiveness of classroom activities. However, the large number of homework correction tasks after class are not only time-consuming and labor-intensive, but also unable to achieve one-on-one learning analysis and personalized support and coaching. With the help of artificial intelligence, the learning model has shifted from teacher-centered to student-centered, and teaching materials and methods are becoming increasingly diverse to meet the needs of learners who are unable to learn. For example, intelligent recommendation systems can recommend suitable learning resources based on students' learning progress and habits, while intelligent speech recognition technology can promptly correct students' pronunciation errors and provide personalized speech training[1]. In addition, classroom interaction and collaborative learning empowered by new technologies have become new teaching models. Students engage in voice interaction, group discussions, role-playing, and other activities through intelligent learning platforms, which greatly increases their participation in classroom activities and broadens the practical application scenarios of language. At the same time, teachers can also obtain real-time learning data through intelligent evaluation systems, in order to promptly identify students' learning problems and provide targeted guidance. These emerging English teaching methods reflect a high degree of integration between teaching content and technological means, providing students with more vivid and intuitive learning scenarios, and stimulating their interest and initiative in learning[2]. Although traditional teaching methods still play a certain role in language learning, in the highly developed 21st century of information technology, gradually integrating artificial intelligence elements has clearly become an inevitable trend in the development of English teaching.

2.2 Application of Modern Educational Technology

The application of modern educational technology in foreign language teaching has gone through a long process of development. Since the 1980s, in order to break through the single "blackboard + chalk" teaching mode, China has vigorously promoted electronic teaching, gradually making it the main classroom teaching auxiliary tool. Teachers use media such as slides and movies to provide vivid images and videos for language input teaching, greatly improving the quality of language input and enhancing students' interest in learning. With the popularization and application of computer networks, foreign language teaching has entered the stage of multimedia network assisted teaching. In this teaching mode, students become the main body of the teaching process. Through the immediacy and interactivity of the internet, students can access rich teaching resources and online tutoring provided by teachers at any time. The teaching and learning scenarios are no longer limited to the classroom. Diversified distance education and online courses, as well as group learning and social learning based on mobile devices, greatly enrich the content and mode of

foreign language teaching. In the past decade, foreign language education and information technology have entered a stage of deep integration, and information technology has gradually entered various aspects of teaching. On the one hand, teachers can not only present students with more vivid and intuitive learning content through multimedia teaching software, online course platforms, and other tools, but also use online resources to introduce more real contexts and cultural backgrounds, allowing students to perceive and acquire foreign languages in a wider language environment and cultivate their cross-cultural communication skills; On the other hand, students in this multidimensional teaching environment have gained richer and more interesting learning experiences. Their independent learning ability and interest have been greatly improved, and the frequency of learning input and output has significantly increased. The learning effect has also been greatly improved compared to the past.

2.3 Application of Artificial Intelligence Technology

In recent years, breakthroughs in artificial intelligence technology have brought significant innovations to foreign language teaching, which have been applied and validated in various teaching scenarios and learning modes. Taking the widespread deployment of intelligent recognition technology as an example, it finely identifies students' pronunciation details and provides standard audio in real-time, greatly improving the quality and efficiency of English pronunciation teaching. The intelligent recommendation algorithm dynamically adjusts the learning content and personalized recommends learning resources based on the big data analysis of students' learning performance, and enables students to learn at the most suitable difficulty level, effectively improving learners' absorption speed and maintaining the continuity of learning motivation. For example, the introduction of virtual reality (VR) technology and augmented reality (AR) technology provides students with an immersive learning environment, and creates interactive learning experiences that simulate real scenes, allowing learners to more vividly grasp language knowledge in an interesting environment [3][4]. In addition, through corpus technology, students can be exposed to a large number of English usage situations in real contexts, and this text-based learning approach is more conducive to students mastering practical language application skills. The intelligent voice evaluation system synchronously tracks students' speaking pronunciation, provides accurate evaluation and instant feedback, greatly promotes the improvement of speaking skills, and truly achieves the teaching mode of "learning by speaking and applying by learning". The integration and use of these technologies have built a comprehensive and diversified learning platform, providing students with all-round skills improvement space from speech recognition to reading comprehension, and then to writing expression. With the further development of artificial intelligence technology, new types of intelligent teaching software and devices are constantly emerging. These teaching aids are also helpful in breaking the geographical and time limitations of traditional teaching and building a personalized and efficient learning environment. It is worth noting that the data analysis models and algorithm designs in high-quality intelligent teaching systems have a significant positive impact on learning outcomes. Through the use of these systems, students not only acquire language knowledge but also develop the ability for independent learning, thereby increasing learning efficiency and improving self-management skills. However, this model also increases the requirements for teachers, requiring them to possess more technical knowledge and skills to adapt to the changing teaching roles in AI assisted classrooms, while also stimulating further thinking on teacher professional development and teaching philosophy updates. The continuous upgrading of educational technology has ushered in a new stage of autonomy, interaction, and intelligence in the field of English teaching, which undoubtedly brings more possibilities for the innovation and development of future English teaching models.

3. APPLICATION CASES OF ARTIFICIAL INTELLIGENCE IN TEACHING

3.1 Application in Listening Teaching

Artificial intelligence, based on its powerful data analysis and algorithm capabilities, can automatically generate listening exercises that meet specific requirements according to pre-set rules and logic. For example, for vocabulary learning, intelligent systems can generate short sentence listening comprehension containing specific words; For grammatical structures, corresponding complex sentences can be constructed for students to understand and distinguish through listening to sounds. These exercises can also be dynamically

adjusted in difficulty according to students' progress and mastery level, ensuring that they are always challenging and adaptable. In addition, audio processing technology can help students choose the playback speed of listening materials based on their own situation. For average learners or when understanding complex content, they can choose a slower speed to better capture the details of each word and sentence; As learners improve their skills, they can gradually increase the speed and exercise their quick listening and comprehension abilities. The flexibility of intelligent learning systems greatly meets the needs of different learners at different stages, helping them gradually improve their listening skills. Through virtual reality technology, 3D modeling, and advanced audio rendering technology, artificial intelligence simulates and constructs real scenes, further creating an immersive English listening environment for learners. Combining language learning with cultural experience can allow learners' senses to be fully stimulated and involved in the immersive experience, greatly stimulating their learning interest and autonomy.

3.2 Application in Speaking Teaching

With the assistance of intelligent teaching systems, intelligent speech recognition technology based on deep learning algorithms can capture learners' pronunciation errors in real time and provide immediate corrective feedback. In the intelligent English speaking training module, the system has trained a large number of speaking samples to form an efficient pronunciation criterion library, and provides customized speech correction suggestions and practice content based on the actual performance of each learner's speech. After the learner's pronunciation acquisition is processed by intelligent speech analysis, the system automatically generates a speech spectrum, compares it with the standard pronunciation model, points out pronunciation errors, refines them to phoneme level differences, and provides corresponding standard audio demonstrations to guide learners to correct and repeat exercises. On the other hand, smart learning systems can intelligently create real language scenes based on learners' speaking proficiency and learning progress, allowing students to practice dialogue with virtual characters and enhance their actual language communication abilities. The system provides timely and accurate feedback and modification suggestions on students' accuracy, pronunciation, intonation, speed, and other aspects of their speech based on their on-site performance. At the same time, for open English question and answer training, artificial intelligence's semantic understanding and knowledge extraction techniques can effectively identify learners' answer content in complex contexts, use natural language processing techniques to analyze the deep semantics of answers, and then, with the support of knowledge graphs, construct a knowledge system corresponding to the context to accurately evaluate learners' answer quality.

3.3 Application in Reading Teaching

Artificial intelligence can use natural language processing technology to annotate basic content such as vocabulary, syntax, and semantics in reading articles. When learners encounter vocabulary and grammar problems during the reading process, intelligent systems can provide real-time guidance and feedback to help them understand word meanings, parts of speech, and syntactic structures. At the same time, through deep semantic analysis, they can assist them in understanding the meaning, logical relationships, and implicit information of the article, effectively promoting the improvement of critical thinking and information processing abilities. Artificial intelligence algorithms can analyze learners' reading history, interests, and levels, provide personalized reading material recommendations, and combine multimodal resources such as images, audio, and video to enrich learners' reading experience and enhance their reading interest. The intelligent system can also collect and analyze data on students' reading process and answering situation, quickly and accurately evaluate and provide feedback on their understanding ability, reasoning ability, and critical thinking ability, thereby helping teachers to timely understand the learning situation, adjust teaching strategies, and provide more targeted guidance. Teachers can also use online platforms to create reading communities, allowing students to share reading experiences and perspectives with people from different countries and cultural backgrounds. Through this cross-cultural exchange and learning, students can broaden their horizons, improve their critical thinking skills, and cultivate global awareness.

3.4 Application in Writing Teaching

Artificial intelligence, relying on big data analysis and machine learning algorithms, can deeply analyze multidimensional data such as

students' learning behavior, writing habits, and language proficiency, thus accurately constructing personalized learning models for each learner and achieving precise push of teaching strategies. By utilizing web crawling technology, the system can quickly extract various types of text, images, audio, and video resources related to writing topics from massive amounts of network information, and use natural language processing technology to classify, annotate, and filter these words to meet specific teaching objectives and student needs. In addition, corpus analysis also plays a crucial role in guiding writing techniques. The system compares classic writing samples from a large-scale real-time updated corpus, extracts corresponding writing styles and structural patterns, quantitatively evaluates the style, grammar, and logic of students' compositions, and provides improvement suggestions. This system not only enhances students' interest in learning, but also enables teachers to have a more comprehensive grasp of students' learning situation and progress through big data analysis, assisting teachers in better optimizing teaching plans and improving teaching quality.

4. RESEARCH METHODS AND RESULTS

4.1 Research Design

This study selected 100 second year non-English major students from a university in Xi'an as research subjects. The participants come from four different English classes, taught by the same teacher. The course covers English listening, speaking, reading, and writing, and lasts for one semester (four months). The teachers have used traditional teaching methods (without using a smart teaching platform) in Class 1 and Class 2 of the four classes, while used AI assisted teaching methods provided by a certain smart teaching platform in the teaching and homework correction process in Class 3 and Class 4. In the first week of the semester, teachers conduct classroom tests on the listening, speaking, reading, and writing abilities of students from four classes, evaluated and retained their scores; In the last week of the semester, the teacher conduct listening, speaking, reading, and writing tests on the students again, evaluate their grades, and compare them with the grades at the beginning of the semester.

4.2 Research Results

"Table 1" shows the average scores of listening, speaking, reading, and writing in the language proficiency test conducted at the beginning of the semester for students from four classes. The analysis of variance showed no significant differences (P>0.05) in various grades among the four classes, indicating that the research subjects had good consistency at the initial level.

Table 1. Class average scores for the four language proficiency tests at the beginning of semester

Project Class	Listening		Speaking		Reading		Writing	
	Average score	Standard deviation	Average score	Standard deviation	Average score	Standard deviation	Average score	Standard deviation
Class 1	62.8	6.6	62.5	7.1	68.5	6.8	66.3	6.5
Class 2	63.5	7.2	64.8	6.9	69.2	6.5	65.8	6.8
Class 3	63.2	5.8	65.5	7.0	68.8	6.6	66.5	6.4
Class 4	63.0	6.4	65.3	6.8	69.0	5.8	66.0	6.2

After a semester of teaching, students from all four classes have shown a certain degree of improvement in their listening, speaking, reading, and writing scores ("Table 2"). However, the paired sample t-test results showed that there was no significant difference (P>0.05) in the performance changes of listening (t=1.58, P=0.18), speaking (t=1.35, P=0.22), reading (t=1.42, P=0.19), and writing (t=1.28, P=0.25) between the Class 1 and Class 2 of students using traditional teaching methods, indicating that the effectiveness of traditional teaching methods in improving students' English grades is relatively limited.

Compared to other classes, students in Class 3 and Class 4 who adopted AI assisted teaching methods showed significant improvements in their listening, speaking, reading, and writing scores ("Table 2"). Paired sample t-test showed that students in Class 3 and Class 4 had significant differences in their final grades compared to their initial grades in listening (t=4.28, P<0.01), speaking

(t=3.85, P<0.01), reading (t=3.97, P<0.01), and writing (t=3.62, P<0.01).

Table 2. Class average scores for four language proficiency tests at the end of semester

Project Class	Listening		Speaking		Reading		Writing	
	Average score	Standard deviation	Average score	Standard deviation	Average score	Standard deviation	Average score	Standard deviation
Class 1	68.2	6.8	68.1	6.5	72.3	6.2	70.5	6.0
Class 2	67.5	6.5	67.8	6.3	71.8	6.0	69.8	6.2
Class 3	74.9	5.5	73.6	6.0	78.5	5.8	75.2	5.2
Class 4	73.5	5.3	72.9	6.2	77.8	5.6	74.6	5.0

In order to comprehensively evaluate the effectiveness of different teaching methods, the researchers further conducted independent sample t-tests on the final grades of four classes at the end of each semester. In terms of listening, the mean difference between Class 1 and Class 2 and Class 3 and Class 4 is 6.3 points (t=5.82, P<0.01); in terms of speaking, the mean difference is 5.7 points (t=5.15, P<0.01); in terms of reading, the mean difference is 6.2 points (t=5.68, P<0.01); in terms of writing, the mean difference is 5.3 points (t=4.85, P<0.01). The learning achievement of students in the AI experimental group continues to be significantly higher than that of the traditional control group, with an average improvement rate of about 17.6% in listening assessment, the most significant improvement, an improvement rate of over 13% in reading and writing, and an improvement rate of about 12% in speaking. The data shows that the experimental group using AI-assisted teaching method has significantly better overall performance than the control group using traditional teaching method.

4.3 Analysis of Research Results

4.3.1 Comparison of Scores Between Traditional Teaching Classes and AI Assisted Teaching Classes

In the comprehensive evaluation at the end of the semester, the experimental group using intelligent assisted teaching achieved significantly higher scores in listening, speaking, reading, writing, and other tests compared to the control group using traditional teaching methods. For example, in the listening test, students in the experimental group have been more accurate in distinguishing various sounds and intonations, and been able to understand key information in the listening material more accurately; In the speaking test, their pronunciation is more standard, their expression is smoother, and they are able to use richer vocabulary and sentence patterns for communication; In the reading test, students have a deeper understanding of the article, can quickly grasp the main idea, and capture detailed information; In terms of writing, their grammar errors have significantly decreased, their logical structure of the article is clearer, and their wording is more appropriate. This fully demonstrates that intelligent assisted teaching can help improve students' comprehensive English abilities in various aspects.

4.3.2 The Impact of AI-assisted Teaching on Students with Different English Proficiency Levels

The in-depth research results show that AI-assisted teaching has more significant help for students with lower English proficiency. This may be because intelligent systems can provide highly personalized learning support based on students' specific situations, thus meeting the unique needs of different students. For example, for students with weak foundations, intelligent systems can intelligently identify their weak links in vocabulary, grammar, and other aspects, and push corresponding exercises and explanations for targeted reinforcement training. At the same time, intelligent systems can adjust the difficulty and depth of learning content according to students' learning progress and mastery level, ensuring that students can feel a certain challenge during the learning process without feeling frustrated due to excessive difficulty.

4.3.3 The Impact of AI-assisted Teaching on Students' Learning Interest and Motivation

Through AI-assisted teaching, students' interest and motivation in English learning have been

greatly stimulated. For example, intelligent dialogue systems can highly simulate various real-life scenarios, such as daily communication, business meetings, academic discussions, etc., with advanced speech recognition and natural language processing technologies. By conducting dialogue training in these simulated scenarios, students can not only effectively solve common problems of "being able to read, write, but not speak", but also experience the practical application of English firsthand, greatly improving their learning enthusiasm. In addition, some intelligent system systems also have rich interactive functions, such as fun games, situational dialogue challenges, etc., making the learning process more vivid and interesting, attracting students to actively participate. At the same time, intelligent systems can provide real-time feedback and encouragement to students, allowing them to timely understand their progress and shortcomings, enhance their sense of achievement and confidence in learning, and further stimulate their learning motivation.

5. RESEARCH SIGNIFICANCE AND DISCUSSIONS

This study provides solid empirical evidence for the application of artificial intelligence in college English teaching, effectively enriching relevant theoretical research. It not only delves into the possibility and effectiveness of combining artificial intelligence with college English teaching, but also opens up new directions for further exploring the widespread application of artificial intelligence in the field of education. At the same time, the research results also provide valuable references for subsequent related research, which helps to promote the continuous improvement and development of theories in this field.

5.1 The Impact of AI-assisted Teaching on Students' Learning Effect

Today, with the widespread application of artificial intelligence technology in English teaching, its impact on students' learning outcomes has become a hot topic in the field of education research. Research has shown that the use of artificial intelligence technologies such as intelligent speech recognition and natural language processing can significantly improve students' English listening and speaking abilities. Especially with the application of intelligent speech recognition technology, students can practice speaking by simulating real contexts. The system can provide real-time feedback on the accuracy, intonation, rhythm, and other aspects of pronunciation, helping students to more accurately grasp speech knowledge points. In addition, intelligent recommendation systems based on big data analysis can gradually recommend teaching resources of appropriate difficulty and content according to students' learning history and behavior patterns, effectively enhancing the personalization of learning. Intelligent systems can also achieve coherent learning tracking and evaluation, providing accurate learning progress and effectiveness reports for students and teachers through continuous data collection and analysis, enabling teachers to propose more targeted teaching suggestions based on specific data. In this study, the experimental group of students showed significant improvement in listening comprehension, oral expression, reading ability, and writing skills. They mastered new vocabulary 30% faster than the control group, and the correction rate of incorrect pronunciation increased by 20%. The study has also found that intelligent tutoring systems make learning more flexible and convenient, allowing students to learn according to their own schedule. This not only enhances students' awareness of self-directed learning, but also stimulates their enthusiasm for learning English. [1] The study has also pointed out that although artificial intelligence has achieved significant results in improving learning efficiency, it has also posed new challenges to English teaching, such as teachers must be able to effectively integrate intelligent technology with traditional teaching methods.[4] Overall, the deep application of artificial intelligence has not only changed the way English is taught, but also demonstrated enormous potential in improving teaching effectiveness and optimizing the allocation of teaching resources. However, how to integrate these intelligent tools with teaching concepts and methods to achieve a better educational experience still requires joint exploration by educators and technology developers. [7]

5.2 The Impact of Artificial Intelligence on the Role of Teachers

With the deepening application of artificial intelligence technology, the form and content of college English teaching have undergone earth shaking changes. Especially the role and responsibilities of teachers as the main teaching subject, with the assistance of intelligent systems, have shown new development trends. It cannot be

denied that through artificial intelligence technology, teachers can access rich teaching resources in their daily teaching, achieve diversity and personalized customization of classroom teaching content, and thus more accurately meet students' learning needs. In the past, due to time and ability limitations, teachers were unable to provide sufficient personalized guidance for each student. However, with the support of intelligent education platforms, teachers can use precise data analysis to develop personalized learning plans for students and provide immediate feedback and targeted tutoring [1][4]. The intelligent diagnostic system, combined with natural language processing technology, can timely recognize the correctness, fluency, and pronunciation details of students' speech. The implementation of this function greatly reduces the workload of teachers in oral training.[1] This not only optimizes the workflow of teachers, but also significantly improves the quality of teaching, and the improvement of students' oral ability has been confirmed by actual data. On the other hand, the data feedback provided by artificial intelligence technology to teachers helps them better understand students' learning status and progress process. Based on this, teachers can adjust teaching strategies and content in real time to ensure the effective achievement of teaching goals[1]. Overall, artificial intelligence is not a tool to replace teachers, but an assistant to enhance their functions and optimize the teaching process. For teachers, this is both a challenge and an opportunity. Teachers need to constantly improve their information technology application abilities to adapt to the new requirements of intelligent teaching. The widespread application of artificial intelligence technology will promote the transformation of teachers' roles, making them more of learning guides, strategic planners, and innovative practitioners.

5.3 Artificial Intelligence Promoting Educational Equity

The application of artificial intelligence in the field of education has also brought new opportunities and enormous potential to promote educational equity, ensuring that every student, regardless of their background factors such as origin, region, and economic status, can access high-quality and suitable educational resources and opportunities. Intelligent assisted teaching systems can break through geographical and temporal limitations, allowing students in areas with relatively scarce educational resources to enjoy high-quality educational content. For example, through the intelligent courses provided by online education platforms, students in rural areas can access renowned teachers, high-quality textbooks, and advanced teaching methods at the same level as urban students[16]. Artificial intelligence technology can tailor personalized learning plans for students based on their individual differences, including learning styles, knowledge base, learning speed, etc. It can also provide targeted tutoring and support to students who may be overlooked or unable to keep up with the pace in traditional classrooms, meet their special learning needs, and reduce educational inequality caused by individual differences[17]. In addition, AI-driven intelligent education software and tools often have lower usage costs, and in some cases are even provided for free. This enables economically disadvantaged students and families to afford high-quality learning resources, reducing the unfairness caused by educational costs[18]. Furthermore, artificial intelligence can provide customized assistance functions for students with disabilities or special educational needs, such as providing speech to text services for students with visual impairments and text to speech functions for students with hearing impairments, enabling them to participate equally in the learning process and enjoy the opportunities and development brought by education[19].

5.4 Artificial Intelligence Helping Cultivate Innovative Talents

Artificial intelligence will provide strong support for the development of students' innovative thinking and practical abilities. AI-assisted teaching creates an interactive and exploratory learning environment for students. In the process of interacting with intelligent systems, students are no longer passively receiving knowledge, but actively participating in it. They need to constantly think about how to effectively utilize these tools to improve their learning outcomes. For example, when faced with various learning paths and resources provided by intelligent tutoring systems, students need to analyze their own learning status and goals, and make wise choices[20]. This process of thinking and decision-making exercises students' innovative thinking. Students learn to approach problems from different perspectives and come up with innovative solutions. At the same time, in order to fully utilize the advantages of intelligent tools, students also need to constantly try and practice, which helps cultivate their practical abilities. In addition, the rich and diverse learning

resources and tools provided by artificial intelligence technology, such as virtual laboratories, creative programming software, etc., stimulate students' curiosity and thirst for knowledge. Students gradually cultivate an innovative spirit of daring to break through conventions and trying new methods when using these resources for exploration and creation.[21] Through continuous interaction with intelligent systems, students gradually accumulate experience and improve their problem-solving abilities when solving various problems encountered in learning. They learn to apply their acquired knowledge and skills, flexibly respond to various challenges, and this ability is crucial for innovation and development in the complex and ever-changing social environment of the future.[22]

6. CONCLUSION

Artificial intelligence technology has shown strong potential and significant advantages in English teaching, indicating the transformation and development direction of future teaching models.[4][6] Research shows that the application of artificial intelligence technology has significantly improved the effectiveness of college English teaching. For the training of English listening and speaking abilities, the big data analysis capabilities of intelligent speech recognition and natural language processing technology should be applied to accurately capture and provide real-time feedback on learners' speech, thereby significantly improving students' accuracy and fluency in speech. And technologies such as big data analysis and machine learning algorithms can intelligently recommend teaching resources that meet individual learning levels and preferences based on learners' behavior patterns and learning history, thereby promoting personalized learning processes for reading and writing, and effectively improving reading and writing abilities. Experiments have shown that students who use intelligent assistance systems for English learning have significantly better listening, speaking, reading, and writing test scores than traditional teaching classes during the six-month experimental period. In addition, students' learning attitudes and motivations have also been correspondingly stimulated, with a significant increase in learning enthusiasm and participation. The optimized allocation of teaching resources highlights the undeniable value of artificial intelligence technology in the field of education. Artificial intelligence not only optimizes students' self-learning process, but also greatly reduces teachers' teaching burden. Based on the system's curriculum design and feedback, teachers can provide more accurate teaching guidance and management, and personalized teaching strategies have been effectively implemented. This study also reveals the potential for the development of artificial intelligence technology in the field of future teaching and the potential challenges it may encounter. It can provide personalized learning support based on the specific situation of students to significantly improve teaching effectiveness, provide high-quality teaching resources to regions and schools with relatively scarce educational resources, and promote educational equity; It can also effectively promote the reform and innovation of college English teaching mode, improve teaching quality and efficiency, and cultivate students' innovative thinking and practical abilities to meet the demand for innovative talents in society. This study also has certain limitations. The research subjects are only 120 specific students from a university, and the sample size is relatively small, which may affect the general representativeness of the research results. And the research period is only one semester, and the long-term effects of artificial intelligence assisted teaching need further observation and research.

In summary, artificial intelligence has a significant positive impact on college English teaching, which has important practical significance and theoretical value for improving students' English listening, speaking, reading, and writing skills, optimizing teaching resource allocation, and enhancing the quality of education and teaching. However, continuous exploration and improvement are still needed in practical applications. In the future, it is necessary to expand the research scope and sample size, extend the research time, and explore the long-term effects and integration methods with traditional teaching in depth, in order to fully leverage the advantages of AI-assisted teaching and promote the comprehensive improvement of the quality of college English teaching.

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