Research on the Construction and Practice of an AI-Driven Personalized Learning Model for College English

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Abstract: With the rapid development of artificial intelligence technology, the field of education has ushered in new changes and opportunities, and college English teaching is also facing new challenges and higher requirements. This study focuses on the AI-driven personalized college learning model and discusses its construction principles, methods and practical effects. Through the analysis of the current university English learning difficulties, it expounds the AI technology in providing accurate learning resources, intelligent guidance and the advantages of learning path planning, builds the fusion of AI personalized learning mode and verifies in practice the students' learning enthusiasm, learning performance and the effectiveness of autonomous learning ability,which can improve and provide useful reference for college English teaching reform.

***Keywords*:** artificial intelligence; college English; personalized learning; learning model

1. Introduction

As an important basic course of higher education, college English plays a key role in cultivating students' international vision and cross-cultural communication ability. However, the traditional college English teaching mode often faces the problem of "one size fits all", which is difficult to meet the learning needs and progress of different students. With the penetration of AI technology in the field of education, the construction of AI-driven personalized learning mode has become an urgent need to improve the quality of college English teaching. This model aims to make use of AI's intelligent analysis and decision-making ability to customize learning programs for each student, stimulate students' learning potential, and maximize their learning effect.

2. Analysis of the status quo and problems of College English Learning

2.1 Students' level is uneven

Freshmen come from different regions and have different educational backgrounds, and their English foundation varies significantly. Traditional classroom teaching is taught in a unified schedule, and students with weak foundation can not keep up, and students with good foundation "do not have enough to eat", which leads to the frustration of learning enthusiasm.（S.Yan, & Y. Yang. 2021)[1].

2.2 Diversified learning needs

Students have different goals in learning college English. Some want to pass the CET-4/CET-6, some plan to study abroad, and some expect to improve their English ability in the workplace. Unified teaching content cannot meet the diversified needs of students.

2.3 Teaching feedback lags behind

It is difficult for teachers to pay attention to the learning status of each student in the classroom, homework correction and feedback cycle is long, and students cannot correct learning mistakes in time, so that the accumulation of problems will affect the follow-up learning.

3. The advantages of AI technology to help college English learning

3.1 Accurate learning and situation analysis

The AI system can collect all kinds of data in the learning process of students, such as online course learning duration, online classroom interaction, homework completion, test results, etc., and accurately locate students' knowledge weaknesses and learning ability level through the data analysis algorithm, so as to provide a basis for personalized learning.(C.T. Yang, Y. Pei, & J. W. Chang. 2020)[2]. For example, the intelligent learning platform can judge the students' lack of grammar,

vocabulary or reading skills according to the type of answer errors and make suggestions for improvement.

3.2 Recommendation of intelligent learning resources

According to the results of learning situation analysis, AI can provide suitable learning resources for students, including articles with appropriate level , grammar videos, special exercises, etc. For example, in terms of vocabulary learning, corresponding levels of word materials are recommended for students with different vocabulary sizes to realize personalized customization of learning content.

3.3 Real-time intelligent tutoring

When students encounter difficulties in learning, AI intelligent tutoring tools can provide help at any time.（N.Y. Kim, Y. Cha, & H. S. Kim. 2019)[3]. For example, the intelligent chatbot can answer students' questions about grammar rules and vocabulary usage immediately, simulate the one-to-one tutoring scenes for teachers, and break the limit of learning time and space.

4. AI-driven construction of personalized college English learning model

4.1 Personalized setting of learning objectives

After entering the school, students will have a comprehensive understanding of their English level with the help of AI learning situation assessment tools,（S.Yan, & Y. Yang. 2021)1 and set phased and long-term learning goals under the systematic guidance of their personal learning needs (grade examination, study abroad, career needs and interests, etc.). For example, for students who plan to pass the CET-4 exam within a year, the AI will refine the requirements of the CET-4 exam syllabus to each learning stage target, such as vocabulary improvement and listening skills mastery progress.

4.2 Personalized learning path planning

According to the learning objectives and learning situation analysis, AI plans the exclusive learning path. The college English learning content is divided into multiple knowledge modules, and the learning order and time arrangement are recommended for students. For example, students with weak oral expression will be given priority to oral training courses, dialogue practice tasks, and real-time communication with AI virtual partners to improve oral fluency.

4.3 Dynamic adjustment of the learning process

During the learning process, the AI continuously monitors the students' learning behavior and knowledge mastery. If the learning results at a certain stage fail to meet expectations , the system will automatically adjust the subsequent learning plan to increase the learning resources and the practices of knowledge weakness ;(C. W. Wei, H. Y. Kao, H. H. Lu, & Y. C. Liu. (2018)[5]. If students make significant progress, the learning pace should be appropriately accelerated and higher learning content will be introduced to ensure that the learning process is always in line with the actual state of students.

5. Practice study design

5.1 Research object

Two freshmen classes of the same level in a university were selected as experimental and control groups, with 50 students in each group. There was no significant difference in the mean score of admitted English between the two groups, ensuring the fair starting point of the experiment.

5.2 Control of experimental variables

The experimental group adopts the AI-driven personalized learning mode and the intelligent English learning platform introduced by the school to carry out teaching activities; the control group adopts the traditional classroom teaching mode according to the unified teaching materials and schedule. The two groups are taught by the teachers in the same team , and the total teaching length is the same, and only the teaching mode is different.

5.3 Data collection method

Academic performance: collect the scores of two groups of students in college English courses at the beginning and the end of the semester to compare the improvement of the scores.

Learning behavior data: recorded students 'online learning duration, number of resource visits and questioning frequency through the intelligent learning platform; teachers in the control group recorded traditional learning behavior data such as students' classroom participation and homework completion.

Learning satisfaction survey: At the end of the semester, questionnaires were distributed to two groups of students to

learn about their satisfaction with the learning process and effect.(H.Du. (2021)[4].The questionnaire adopted the form of scale, covering the adaptation of teaching content and the improvement of learning autonomy.

6. Practice results and analysis

6.1 Comparison of academic performance

The examination results of the final semester showed that the average score of the experimental group was 10 points higher than that of the control group, and the score distribution was more concentrated in the middle and high level segments. This shows that the personalized learning model effectively promotes students' mastery of knowledge, reduces the gap between students, and improves the overall learning level.

6.2 Differences in learning behavior

The average online learning time of students in the experimental group reaches 5 hours per week, far exceeding the traditional classroom learning time of the control group; the number of resource visits is more than 20 times per week, and the frequency of active questions is 30% higher than that of the control group. It shows that personalized learning stimulates students' motivation for independent learning and encourages them to participate in learning actively.

6.3 Feedback of learning satisfaction

Students in the experimental group scored higher in all dimensions than the control group. In terms of the adaptation of teaching content, 80% of the students in the experimental group think that the learning resources fit their needs well; in terms of improving learning autonomy, 70% of the students learn to plan learning independently, while the corresponding proportion in the control group is only 30% and 20%, reflecting that the personalized learning mode is highly recognized by the students.

7. Conclusion

The AI-driven personalized college English learning model constructed and practiced in this study has achieved remarkable results, effectively solving many problems in traditional teaching, and improving students' academic performance, independent learning ability and satisfaction. However, AI still faces challenges such as technology stability and data privacy protection in educational applications. In the future, it is necessary to further optimize the integration of AI technology into education, strengthen the training of AI teaching skills for teachers, improve relevant policies and regulations, and promote the sustainable development of college English teaching and even the whole education to a more intelligent and personalized direction, so as to lay a solid foundation for cultivating innovative talents to meet the needs of the future.

In follow-up research, we can expand the research to different levels of colleges and universities, to explore the potential of AI technology in evaluating the impact of students' emotional factors (such as learning motivation and anxiety) on learning effects, continuously innovate college English teaching mode, and help improve the quality of higher education training.

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