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English Teaching Strategy Research and Effect Evaluation Based on Deep Learning in Intelligent Environment

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Abstract. In university English teaching, the integration of deep learning and wisdom classroom is very important to improve students' English thinking ability. The article first explains the connotation and correlation of deep learning and smart classroom. Then, it puts forward how to promote students' deep participation and thinking in college English teaching through the establishment of wisdom teaching objectives, the creation of teaching situations, the design of teaching activities and the development of teaching evaluation. It aims to build an efficient college English wisdom classroom and promote the development of students' comprehensive English ability. In order to test whether intelligent teaching environment and deep learning model can effectively improve the traditional college English teaching model: Students have low sense of learning, low ability of knowledge transfer and application, and low ability to deal with practical problems, improve teaching quality and efficiency, build college English in-depth classroom teaching mode based on intelligent teaching environment, and course teaching implementation process, and take a college English course as a sample to conduct a unit teaching quasi-experiment and effect evaluation.

Keywords: English teaching, deep learning, effect evaluation.

1. Introduction

In the field of education in the 21st century, deep learning has become an effective way to improve students' comprehensive literacy. Deep learning emphasizes that students achieve deep understanding and application of knowledge through active exploration and critical thinking. In order to adapt to this educational concept, smart classroom, as an innovative teaching model, is widely regarded as the key to promote educational change. In February 2019, China's Education Modernization 2035, issued by the Central Committee of the Communist Party of China and The State Council, highlighted the importance of educational innovation, pointing out the role of educational technology in promoting deep learning for students. Therefore, this paper studies the integration of wisdom classroom, aiming to realize the innovation of college English teaching content and methods, and adapt to the needs of education in the new era [1-4].

2. Deep learning and Wisdom Classroom Connotation Interpretation

2.1. Deep learning

Deep learning, as an educational philosophy and practice, has its roots going back to the 1970s, when education scholars first distinguished the essential differences in learning in their writings [5]. They define deep learning as those learning processes that enable students to actively relate, understand, and construct knowledge. This type of learning is in stark contrast to shallow learning, which relies solely on rote memorization and repetition. Over time, the concept of deep learning has been further developed and deepened. In the context of modern education, especially in the context of smart classroom, deep learning has been given a new meaning, it is no longer just the accumulation of knowledge [6], but also a meaningful learning process in pursuit of understanding, application and transfer. This kind of learning emphasizes students' active participation and deep cognitive activities, and promotes the development of higher order knowledge through the adaptive use of advanced learning strategies. At the core of deep learning is the student's total engagement, which requires students to not only deeply understand the material they are learning cognitively, but also to empathize with the content emotionally and motivated [7-9].

2.2. Wisdom Classroom

In-depth research in the field of education reveals that the core goal of wisdom classroom is to promote the growth of students' wisdom. Wu et al. [10] pointed out that the cultivation of wisdom is an indispensable part of the teaching process, which reflects the ultimate pursuit of education-the overall shaping of wisdom [11]. From the perspective of technology, Tang Yewei et al. proposed that the construction of smart classroom relies on modern information technology. Through innovative teaching strategies and modes, deep integration of teaching and technology can be realized to create a personalized, intelligent and digital learning environment, thus promoting the development of students' ability [12]. Combining these viewpoints, smart Classroom is committed to cultivating talents with advanced intelligence and innovative abilities, aiming to improve students' core literacy. It integrates cutting-edge technologies such as artificial intelligence and big data analysis, builds an intelligent learning environment, and forms an intelligent system composed of cloud, platform and terminal. This system realizes data-driven teaching decision, multi-dimensional communication, personalized distribution of learning resources, and immediacy of evaluation feedback [13,14].

The structure framework of smart classroom has the following characteristics: data-driven teaching decision-making allows teachers to evaluate learning and optimize teaching plans based on data analysis to achieve accurate teaching; Multi-dimensional interaction enhances the exchange of information between teachers and students, and between students and students, and supports a blended learning model through the cloud platform; Personalized learning resource push takes into account the individual differences of students to enhance learning motivation; Real-time evaluation feedback Using data analysis for real-time learning evaluation, to build a diversified intelligent evaluation system [15,16].

3. Relevance of Deep Learning and Smart Classroom

1. Deep empowerment: Deep learning drives smart classroom.
   As an educational concept, the core goal of deep learning is to nurture students' growth in higher-order thinking skills, including critical thinking, complex problem solving, and cross-disciplinary application of knowledge. This educational method goes beyond simply memorizing knowledge and pays more attention to students' active participation and deep thinking in the learning process. Deep learning is designed to move students from basic memory and understanding to more advanced cognitive skills such as application, analysis, evaluation, and innovation. To achieve this, students need to flexibly apply multiple learning strategies, such as self-directed learning, collaborative learning and inquiry learning, in the learning process to achieve deeper engagement and experience. In addition, deep learning also emphasizes the deepening of learning outcomes, that is, students can apply what they have learned to new situations, and connect new knowledge with old knowledge through in-depth thinking, so as to promote their own knowledge internalization and ability improvement [17,18].
2. Smart Learning: Smart classroom promotes deep learning.
   Smart classroom represents an innovative teaching model that relies on creating a customized, intelligent and digital learning experience for students. In this model, the smart classroom supports students' in-depth learning through four key elements: data-based teaching decisions, contemporary information technology, including artificial intelligence and big data analysis, multi-dimensional interaction, intelligent learning resource recommendation, and instant learning effectiveness evaluation. The smart learning environment has the ability to perceive the learning situation, identify the characteristics of students, provide appropriate learning materials and convenient communication tools, and automatically track the learning process and evaluate the learning results, so as to provide an effective learning experience. This learning environment not only provides students with a variety of learning resources, but also realizes the personalized customization of teaching content and precise teaching through intelligent technology [19,20].

4. College English Wisdom Classroom Teaching Strategies Based on Deep Learning

1. Establish the wisdom teaching goal and lead the students to understand deeply.
   When establishing the goal of wisdom teaching, educators need to change the traditional mode of knowledge transfer and devote themselves to guiding students to deeply explore the internal logic and cultural essence of language. Taking English literature teaching as an example, teachers should set goals so that students can not only retell the plot of literary works, but also dig deep into the deep theme and cultural background of the works, so as to analyze the characters, evaluate the writing skills of the authors, and creatively express their own opinions. Through the smart teaching platform, teachers can monitor students' learning trajectory, gain insight into students' personality and needs, and formulate teaching plans that meet individual needs. For

example, according to the differences in students' English ability and interest, teachers can set graded learning goals, including basic language knowledge, in-depth cultural exploration and critical thinking [21].

The formulation of intelligent teaching goals should keep up with the development of The Times, combine with social needs, and integrate the core concepts of English subjects to ensure that students have a deep understanding of and master the key knowledge of English subjects. In the teaching practice of smart classroom, we should focus on the difficulties and key points of English teaching, adhere to the teaching concept of "deepening the integration of practice and innovation", use modern information technology means to improve teaching effectiveness, and cultivate students' core English literacy. In the teaching process, teachers should encourage students to master the basic ability of "memory, understanding and application", and then move forward to the higher level of "analysis, evaluation and creation".

2. Create intelligent teaching situation and stimulate students' deep participation.

   Constructivism learning theory holds that learning is always connected with specific situations. Therefore, teachers should make use of the intelligent information platform and the advantages of information technology to create intuitive, vivid and effective intelligent teaching situations. For example, when exploring the topic of "Global Communication", teachers can design a Model United Nations conference situation in which students play the role of representatives from different countries, prepare speeches and conduct debates in English. This kind of contextualized teaching not only helps students to learn and use English in practice, but also helps to develop their cross-cultural awareness and communication skills. the way to create intelligent teaching situations is reflected in the following aspects: First, by creating problem situations, teachers can ask challenging questions, such as "What are the key challenges ininternational relations today?" To stimulate students' curiosity and thirst for knowledge. Secondly, through the "task-driven" approach, we set specific learning tasks, such as asking students to study and report "Cultural Differences in Business Negotiations" in group form, and guide students to learn independently. Finally, computer simulation, virtual reality (VR) technology or augmented reality (AR) technology is used to build a virtual simulation learning environment, such as simulating an international business conference, allowing students to simulate practical operations, observe phenomena, read data, scientific analysis, and combine theory with practice to cultivate students' spirit of inquiry and innovation ability [22-25].

3. Design intelligent teaching activities and organize students to explore in depth.

   The core of deep learning is to stimulate the inner potential of students, make them become the leader of learning, and thus promote the comprehensive development of their core literacy. In college English teaching, teachers should design intelligent teaching activities that are both challenging and able to guide students to conduct in-depth inquiry according to language learning theories and foreign language teaching theories.

   For example, teachers can use the smart teaching platform to provide students with self-inquiry tasks before class on the theme of "Global Issues ". Students are exposed to reading materials, videos and discussions related to global issues before class. In the class, teachers organize small groups of students, each group to conduct in-depth analysis of a specific global problem, such as "ClimateChange", and use intelligent analysis tools and mind mapping software to organize information and build knowledge frameworks. Students then present their findings in class and interact with other groups to promote deeper understanding and the development of critical thinking. After class, teachers can arrange for students to participate in projects related to the topic, such as making a short video on "Sustainable Development Goals." Students are required to apply what they learn before and during the course to creative ideas, screenwriting, role playing, and video production. Teachers can collect students' learning behavior data through the smart teaching platform and conduct learning situation analysis to understand students' personality differences and learning needs [26].

4. Carry out wisdom teaching evaluation and inspire students to think deeply.

   Wisdom teaching evaluation should focus on the teaching objectives, pay attention to the evaluation of students' subjectivity, learning motivation and value orientation, and incorporate language ability, learning ability, thinking quality and cultural awareness into the evaluation system. For example, in college English courses, teachers can design a comprehensive evaluation system through the intelligent teaching platform. Before class, teachers can make use of the platform to diagnose learning situation, understand students' starting ability, learning motivation and interest, so as to provide personalized learning resources for students. In class, teachers can collect students' learning behavior data through real-time classroom tests and interactions, analyze whether students have really mastered the classroom content, and adjust teaching strategies according to these data. For example, teachers can design a classroom discussion on "Cultural Differences "to evaluate students' understanding of cross-cultural communication through their speech and interaction. After class, teachers can analyze students' mastery of learning goals through goal achievement evaluation. This kind of final evaluation not only pays attention to students' mastery of language knowledge, but also pays more attention to students' performance in higher cognitive skills such as application, analysis, synthesis and evaluation. For example, teachers can ask students to complete a research report on "Global Warming" and show their

in-depth analysis of the problem and creative thinking of solutions in the report. Wisdom teaching evaluation should also pay attention to the combination of process evaluation and terminal evaluation [27,28].

5. Effectiveness Evaluation

In order to describe the changes in the critical thinking ability, transfer application ability and problem solving ability of middle school students in the experimental group and the control group, the three types of scales were released online one round each before and after the new class of "Unit 3 Digital campus" teaching, and the research object was undergraduate students. In the experimental group, 304 samples of the three scales are published, and 304 samples are recovered, with a recovery rate of 100%. In the control group, 305 copies of the three scales are published, and 302 copies are recovered, with a recovery rate of 99.01%. The overall recovery rate of the two groups is higher. In both the experimental group and the control group, Kronbach coefficient of each scale is > 0.75, indicating that the questionnaire has a high reliability, as detailed in Table 1. Considering that the control group is difficult to effectively achieve procedural evaluation, in order to reasonably compare the unit teaching effect of the experimental group and the control group, the unit test score after the unit teaching is used as an alternative evaluation index of knowledge mastery ability.

Table 1. Three types of scale basic information statistics

Project	Group	Released	Recovred	Kronbach coefficient
Critical thinking ability	A	304	304	0.820
Critical thinking ability	B	305	302	0.811
Transfer application capability	A	304	304	0.787
Transfer application capability	B	305	302	0.806
Problem solving ability	A	304	304	0.922
Problem solving ability	B	305	302	0.859

Here, A is experimental group, B is control group.

The unit test results of the experimental group and the control group are shown in Table 2. It can be seen that in the experimental group, the highest score, the lowest score, the expected score and the excellent rate of the unit test of the three major sample classes of culture and education, economics and management and mathematics and science are slightly higher than that of the control group, indicating that the teaching effect of the experimental group is relatively good. It is worth noting that the standard deviation of the unit test scores of the three majors in the experimental group is greater than that of the control group, and the excellent and good rate of the experimental group is generally higher than that of the control group (except for the major of economics and management), but the failure rate is generally slightly higher than that of the control group (except for the major of culture and education). The above results indicate that the deep learning classroom model in the intelligent environment may increase the heterogeneity of students' learning effect and expand the polarization of scores while improving the teaching effect.

Table 2. Descriptive statistics of unit test scores

Group	Major	SN	HS	LS	E	SD	EGR/%	FR/%
A	culture and education	48	98	61	85.3	27.71	75.0	0
A	Business and Economic	53	95	53	83.6	38.36	67.9	9.4
A	mathematics	51	96	44	84.9	29.06	72.5	7.7
B	culture and education	49	95	59	84.8	26.44	69.7	2.0
B	Business and Economic	50	95	57	83.9	28.20	68.5	6.0
B	mathematics	52	94	41	83.5	28.76	69.2	5.8

Here, SN=students number, HS=highest score, LS=lowest score, E=expectation & SD=standard deviation, EGR=excellent and good rate, FR=failure rate.

In summary, the quasi-experimental results of this study show that compared with traditional classroom teaching, deep learning classroom mode in intelligent environment can significantly improve students' knowledge mastery ability, transfer application ability and problem solving ability. However, the effect on the improvement of

critical thinking ability is not significant enough, and may increase the heterogeneity of students' academic performance and ability improvement.

6. Conclusion

With the continuous progress of educational technology, the combination of deep learning and smart classroom provides a new perspective and method for college English teaching. By creating situations, designing activities, and conducting evaluations, teachers can guide students towards deeper cognition and understanding, and develop their critical thinking and innovative abilities. This teaching model not only improves students' language skills, but also promotes the development of their comprehensive qualities, laying a solid foundation for their future academic and professional careers.

7. Conflict of Interest

The authors declare that there are no conflict of interests, we do not have any possible conflicts of interest.

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Biography

Liuxin Gao is with the School of Foreign Languages, Zhengzhou University of Science and Technology. Several papers had been published related to the work in this paper. Research direction is English text analysis, English data analysis.