A Case Study on College Students' English Adaptive Learning in Smart Learning Environments

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Abstract: With the rapid development and widespread adoption of information technology, smart technology has permeated virtually every industry, not only transforming our production and lifestyle but also revolutionizing education and teaching methods. Therefore, enhancing students' adaptive learning abilities in smart learning environments is a critical component in driving the reform and development of university English education. Through random sampling surveys and interviews, the author investigated and analyzed issues such as the use of learning tools, access to learning resources, learning outcomes, and challenges faced by non-English major students at Beijing Institute of Petrochemical Technology in an English smart learning environment. This study aims to provide data support and recommendations for optimizing the English smart learning environment and promoting the development of college students' adaptive learning abilities.

Keywords: Smart Learning Environment ; English Adaptive Learning

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1 Research Background and Significance

With the rapid development of information technology, intelligent technology has not only permeated every aspect of our daily lives but has also deeply integrated into all areas of education and teaching, giving rise to smart learning environments, which are profoundly transforming the landscape of education. As the advanced form of digital learning environments, smart learning environments are an inevitable product of societal informatization (Oxman & Wong, 2014)[1]. They leverage advanced technologies such as the internet, big data, artificial intelligence, and cloud computing to create intelligent, efficient, flexible, convenient, and personalized learning spaces for learners. Many countries are actively promoting the construction and application of smart learning environments. In China, smart learning environments have also garnered significant attention. From the series of education informatization policies introduced at the national level to the proactive implementation of smart teaching practices by schools at all levels, it is evident that smart learning environments have become a key direction for educational reform and development. Many universities have established smart classrooms equipped with intelligent interactive devices, high-definition projectors, and other advanced hardware facilities, while also integrating various online teaching platforms and learning software to achieve the three-dimensional, digital, and shared nature of teaching resources.

For college students' English learning, the importance of smart learning environments is self-evident. On the one hand, as an international language, the demand for English learning is growing and becoming increasingly diverse. In today's rapidly globalizing world, English plays a crucial role in academic exchanges, cross-border business cooperation, and cultural exchanges. College students need to have a solid foundation in English and good language application skills to adapt to future studies, work, and life. The smart learning environment can provide a wealth of diverse learning resources, such as a vast amount of English learning materials, real-life language communication scenarios, and personalized learning tools, to meet the learning needs and styles of different students. On the other hand, the smart learning environment helps break the traditional time and space constraints of English learning, enabling the generalization of learning. Students are no longer confined to classrooms and textbooks; they can access learning platforms anytime, anywhere via smart devices to engage in English learning and communication. This flexibility allows students to better manage their learning schedules and make full use of fragmented time to enhance their English proficiency.

However, despite the numerous opportunities smart learning environments offer for college students' English learning,

students still face many challenges in adapting to this new learning environment (Open Ideas at Pearson & Ed Surge, 2016)[2]. Therefore, conducting in-depth research on college students' adaptive English learning in smart learning environments holds significant practical significance.

Based on this, the author conducted a random sample questionnaire survey and interviews with non-English major students at Beijing Institute of Petrochemical Technology to further understand the current status of English adaptive learning in smart learning environments among non-English major students at our institution.

2 Research Contents and Methods

2.1 Research Contents

This study aims to understand the actual situation of non-English major college students in our university in English smart learning, conducting questionnaire surveys on issues such as the use of learning tools, access to learning resources, learning outcomes, and challenges faced, with the goal of providing data support and reference suggestions for optimizing the English smart learning environment and promoting the development of college students' adaptive English learning abilities.

2.2 Research Methods

This survey primarily employed questionnaire and interview research methods, designing questions around multiple aspects of college students' English smart learning. It conducted an in-depth investigation and understanding of the current state of adaptive learning among non-English major students in the smart learning environment, collected relevant data, and conducted analysis.

3 Survey Results and Analysis

3.1 Overall Usage Situation

First, the statistics show that smart learning software has a high level of penetration among non-English major students at our university, with 72.5% of respondents indicating that they have come into contact with and used English smart learning software to varying degrees. However, the proportion of frequent users is relatively low, at only 25.4%. In terms of the selection of smart tools or platforms, online dictionaries have the highest usage rate, at 67.6%; followed by smart learning devices (such as electronic dictionaries and smart pens) and AI voice assistants, at 35.2% and 34.5%, respectively; while smart writing correction software, video tutorials or lectures, English learning websites, and social media and forums—platforms that emphasize comprehensive language application—have relatively low usage rates, all around 20%. This indicates that the majority of respondents use smart platforms for a single purpose, primarily to overcome vocabulary obstacles in English learning, while the probability of using smart learning platforms to increase language proficiency and improve comprehensive English application skills is relatively low.

3.2 Learning Motivation and Learning Outcomes

Among the respondents, the highest proportion (73.9%) use smart platforms to complete course assignments and learning tasks, followed by “preparing for various English exams (such as the CET-4/6, IELTS, etc.),” accounting for 67.6%; However, the proportion of those using the smart platform to improve English speaking and listening comprehension skills was less than 25%, with only 19.7% of respondents able to utilize the smart platform for intelligent analysis and the formulation of study plans. This indicates that students' use of the smart platform remains at a relatively low level, primarily driven by ‘compulsory’ learning for the purpose of completing assignments and preparing for exams, rather than proactive learning aimed at enhancing their overall language proficiency (Wang & Liu, 2020)[3].Few students can utilize platform data to scientifically and reasonably plan their learning.

In terms of learning outcomes, 62.7% of respondents believe that smart platforms help increase interest in English learning, and 85.2% believe that smart learning environments contribute to improving English grades to some extent. This indicates that non-English major students at our university have a high level of acceptance and recognition of smart

platforms in English learning, and most students are active beneficiaries of smart English learning.

3.3 Main Existing Problems

Data show that over half of the respondents believe that the main challenges in smart English learning are 'too many learning resources, making it difficult to screen and utilize them' and 'the lack of effective learning guidance and supervision'. About a quarter of the respondents said they "find it difficult to adapt to the self-directed learning model," and 13.4% reported "difficulties in group collaboration." Therefore, teachers should strengthen supervision and guidance of students' smart English learning and strive to recommend high-quality smart learning platforms or tools to students (Jones & Green, 2018)[6]. It is important to emphasize that self-directed learning does not equate to "learning on one's own." Teachers should strengthen guidance on self-directed learning and effectively utilize the analysis and early warning mechanisms of smart platforms to conduct effective supervision and scientific intervention of students' self-directed learning outcomes.

Additionally, based on the results of the questionnaire and interviews, 61% of respondents reported experiencing feelings of tension and anxiety when encountering difficulties while using smart platforms or tools for English learning, with approximately 8% of respondents stating they felt "at a loss." These negative emotions inevitably impact students' ability to adapt to the smart learning environment. Therefore, teachers should also pay more attention to students' emotional fluctuations, strengthen psychological counseling, and guide students to actively seek help from teachers or peers when encountering difficulties, in order to minimize the negative impact of emotional fluctuations and psychological factors.

4 Conclusion

The deep integration of information technology into education and teaching has brought revolutionary changes to teaching and learning. While students enthusiastically embrace the novelty and convenience of smart learning environments, they inevitably encounter some adaptive difficulties and issues. In the future, we need to conduct more detailed and scientific analyses of the factors influencing students' adaptive capabilities based on the further development of smart learning environments. This will help us gain a deeper understanding of students' current adaptive learning status, assist them in adopting a proper learning attitude, and enable them to fully grasp the true significance of technology-enhanced English learning. Ultimately, this will enhance the breadth and depth of their use of smart learning tools, promote the development of their autonomous learning abilities within smart learning environments, and lay a solid foundation for the sustained development of their adaptive capabilities in English learning.

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