

Research of Online Education in the 5G Era in China

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Abstract: This research takes Guangzhou University as an example, mainly through literature analysis, questionnaire survey, expert interview and other methods, the core issue of this research is to conduct in-depth research and analysis on online education from the three perspectives of "teaching, learning and management" under the 5G enabling, and explore the path to promote the development of online education in the 5G era. The research results show that the integration and upgrading of 5G communication technology and intelligent information technology can truly enable the innovative development of intelligent education, promote the transformation of online education application scenarios and learning and teaching models, gradually form a new pattern of online education, and further realize the great goal of building an educational power.

Keywords: Online education, 5G, Educational Innovation, Path Research.

1. Introduction

This study takes Guangzhou University as an example, the core problem of this study is the deep research and analysis of online education under the empowerment of 5G empowerment. Quantitative analysis involves investigations on students and educators in the online education plan to evaluate their views on the potential income and challenges of 5G technology. Qualitative analysis involves interviews with online education and 5G technical experts, Explore the path of promoting online education in the 5G era, and truly empower the development of online education innovation. The results of the study show that: with the help of 5G technology to provide effective methods and strategies for online education, learning, and management of China, it will effectively improve the teaching quality of online education.

2. Theoretical and Conceptual Framework

2.1. E-Learning Concept

Online education, also known as E-learning, is a new

learning method derived from the development of Online education. The "E" of E-learning represents e-learning, efficient learning, exploratory learning, experiential learning, expanded learning, extended learning, easy-to-use learning and enhanced learning. Its primary purpose is to use Online education and digital technology to transform and guide education and realize the learning experience anytime and anywhere through the Internet, providing a good platform for lifelong learning[1].

2.2. The primary element of Online education

The primary element of Online education is the main component of the Online education system. Traditional education emphasizes three elements: teachers, students and teaching materials[2]. Online education extends these elements: four elements that form the instructor, the learner, the course resources and the teaching platform (as shown in the Figure). The learner is the center, the educator is the key, the course resource is the core, and the teaching platform is the basis. The four-in-one system constitutes the Online education system.

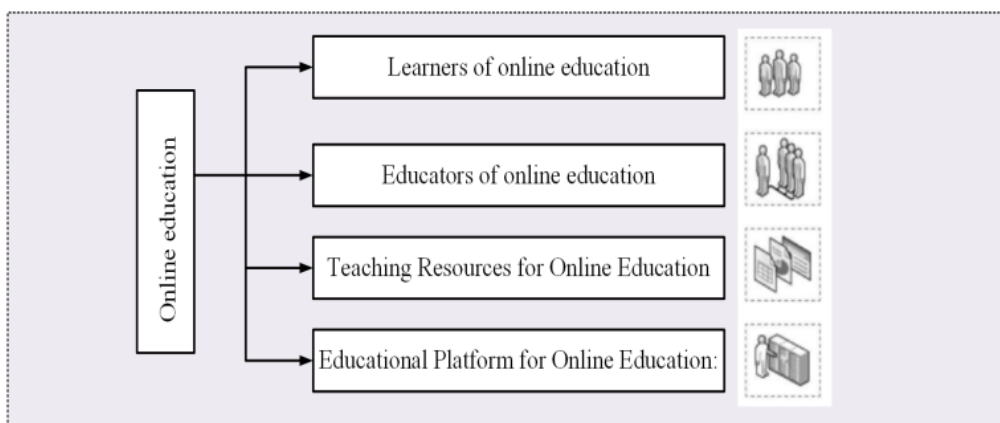


Figure 1. The basics of Online education

2.3. 5G+Campus Intelligent Management

The campus intelligent management system can be

connected with the access control system, and the unified, remote, and precise management of the access control system can be achieved through the platform. With the power

management system, when, where, and who uses the equipment or the equipment in the room or in the room. The dormitory access control can grasp the real-time dynamics of students to sleep, and improve the scientific management level of the dormitory[3]. The system performs light temperature adjustments according to the indoor light situation to maintain healthy light, so that the indoor average luminance is constant and uniform, which is conducive to protecting the vision of teachers and students, and providing students with a healthy and comfortable learning environment. For different teaching conditions, a variety of different light modes (such as reading and writing, video playback, rest, etc.) can be set.

Campus intelligent management requires a large number of connections, high reliability and real-time, or even lower power consumption, and deep-covered network connections. It is easy to deploy, expand, and maintain. In addition, it is necessary to enhance collaboration between cross-network, cross-platform, and cross-application. Simply connecting the communication level, the Internet of Things applications may still be a separate information islands[4-5]. Only by making semantic data interconnection can the underlying communication basis for the establishment of all things achieve the interconnection of all things. The technical

characteristics of 5G network high reliability, low latency, scalability, security and mobility can effectively solve the network problems required for the intelligent management of the Internet of Things campus. Through the connection and even integration of 5G technology and IoT devices, the equipment will become part of the network. It is no longer a simple and marginalized terminal, making the campus intelligent management platform closer to machinery and equipment, and can also achieve the flat Internet of Things network. Management and vertical management.

3. Technology Route of the Study

This study takes Guangzhou University as an example, the core problem of this study is the deep research and analysis of online education under the empowerment of 5G empowerment. Quantitative analysis involves investigations on students and educators in the online education plan to evaluate their views on the potential income and challenges of 5G technology. Qualitative analysis involves interviews with online education and 5G technical experts, Explore the path of promoting online education in the 5G era, and truly empower the development of online education innovation. The research technology route is shown in the figure below:

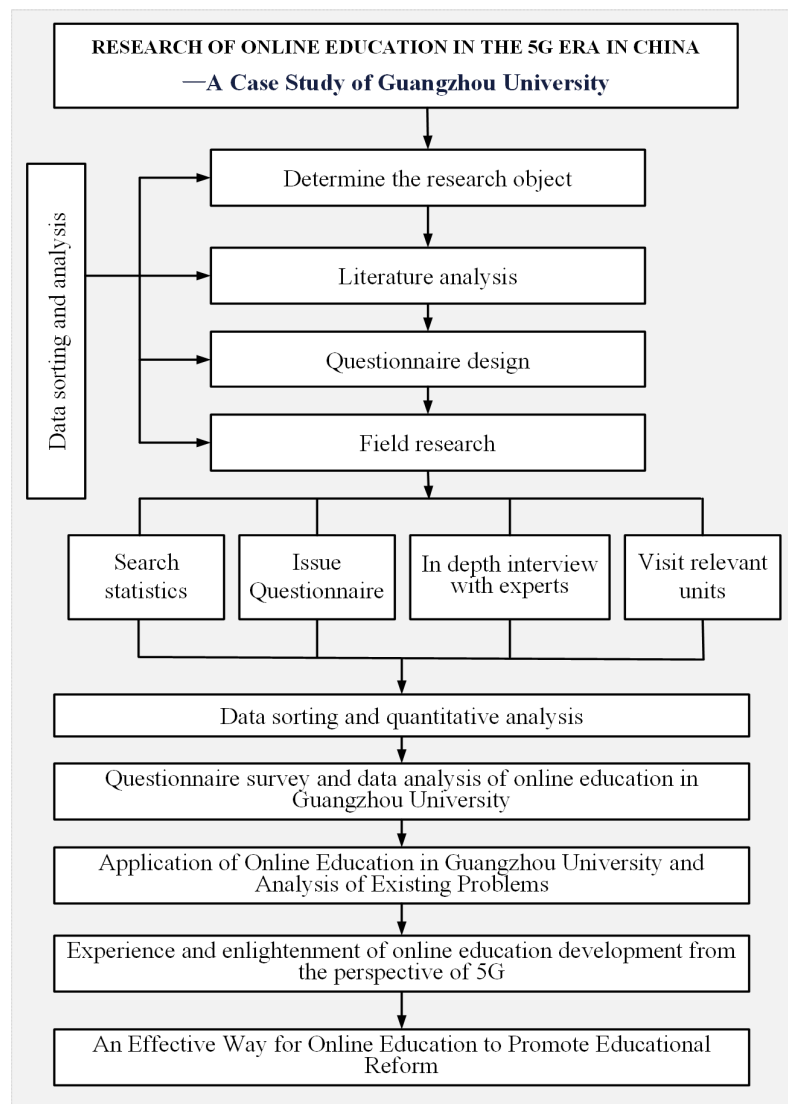


Figure 2. Research technology route

4. Main Content of Research

This part systematically explains the theory of online education from the three perspectives of "teaching, learning, and management". The teaching design and curriculum development of online education, from a "teaching" perspective, generally introduces the teaching and design theory model of online education, online education teaching design, online education curriculum development, curriculum development should be paid attention to, etc. Online learning and support Services, from the perspective of "learning", introduced the theory of online learning, the meta-cognition, learning characteristics and learning motivation of online learners, and online learning support services and general learning; From the perspective of "management", the theory and content of line education teaching management, the management of teachers, and the theory of quality management, quality assurance, quality assessment and quality certification of online education.

4.1. Construction of the new teaching model

Teaching Mode: From "blackboard + chalk" to "computer + courseware" to "cloud computing + big data", the most important module of the online education is the change of teaching models on the Internet[6]. In the complex and non-linear changes of education, it is also accompanied by the innovation of teaching models and methods. In the context of online education, the use of information technology represented by big data, mobile Internet and cloud computing has brought teaching purposes, courses (content), teaching methods, teaching environment, teachers, students and teaching feedback (The reform of the evaluation), the innovation of teaching and learning models is imperative, and the network intelligent teaching model was born in this context.

Based on the theoretical basis and realistic foundation of the above-mentioned network smart teaching, combined with the actual practice of smart learning and teaching systems and Internet multi-terminal teaching, the Internet, smart teaching model is constructed. As the picture shows:

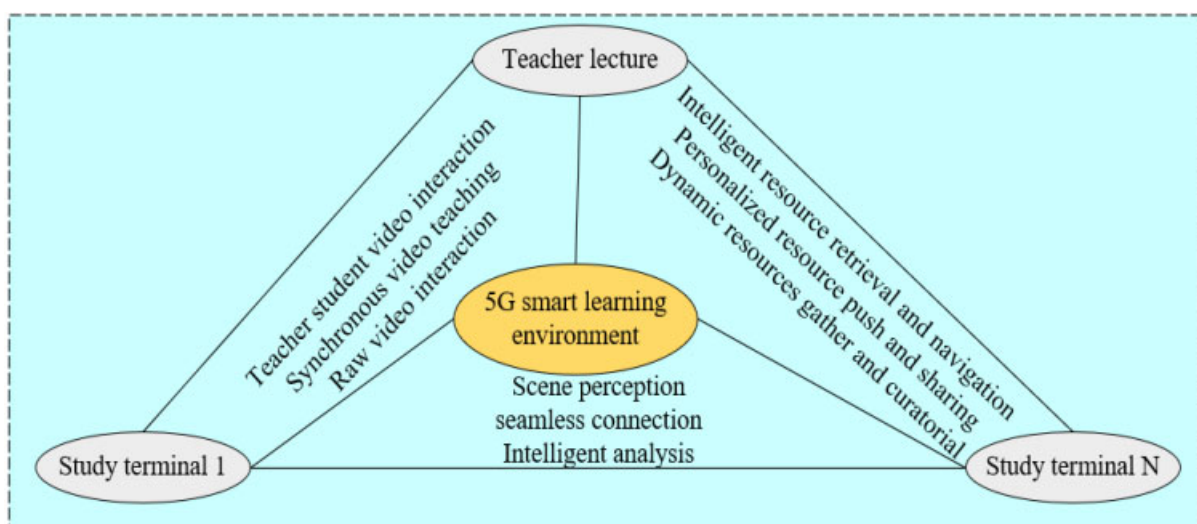


Figure 3. Smart teaching mode map

Multi-terminal synchronization video, interactive teaching platform Multi-terminal synchronization video, interactive teaching platform can achieve all terminals in the same class as traditional classes. Each learning terminal is equivalent to a physical learning group in the class lecture. Each learning group can receive the content of the classroom teaching terminals simultaneously, and each different place learning terminal can also communicate with each other[7]. Teachers can see the learning situation of all learning individuals and learning terminals through the teaching platform, and learners can also see the teacher's teaching video through their own learning terminals.

Intelligent analysis and push platform teaching resources of smart teaching resource analysis and push platforms mainly include intelligent analysis and navigation, personalized push, dynamic resources convergence and curatorial. It is an understanding of the personality of learners, learners' characteristics, learning courses, learning goals and tasks; services provided by learning resource recommendations, learning path selection, and difficulties in learning process are truly achieved. Sexuality and timely.

4.2. Build a personalized learning service model

The core link of personalized learning services in the online educational background is to use big data to achieve personalized learning, including data collection, data generation, data mining, data analysis, data aggregation, and other data. For example, a batch of data can be collected through the learning trajectory, learning difficulties, and learning habits in the electronic archives of the learner; A series of traces of access, learning tasks, and choice of learning paths can be tapped by a number of data; a database based on learning objects is generated on the basis of data collection, generation, and excavation, which includes all important information of the learning objects. Essence Teachers can extract and analyze information according to the database of learning objects, and then use statistical analysis software for statistical analysis. They can also build models of learning objects.

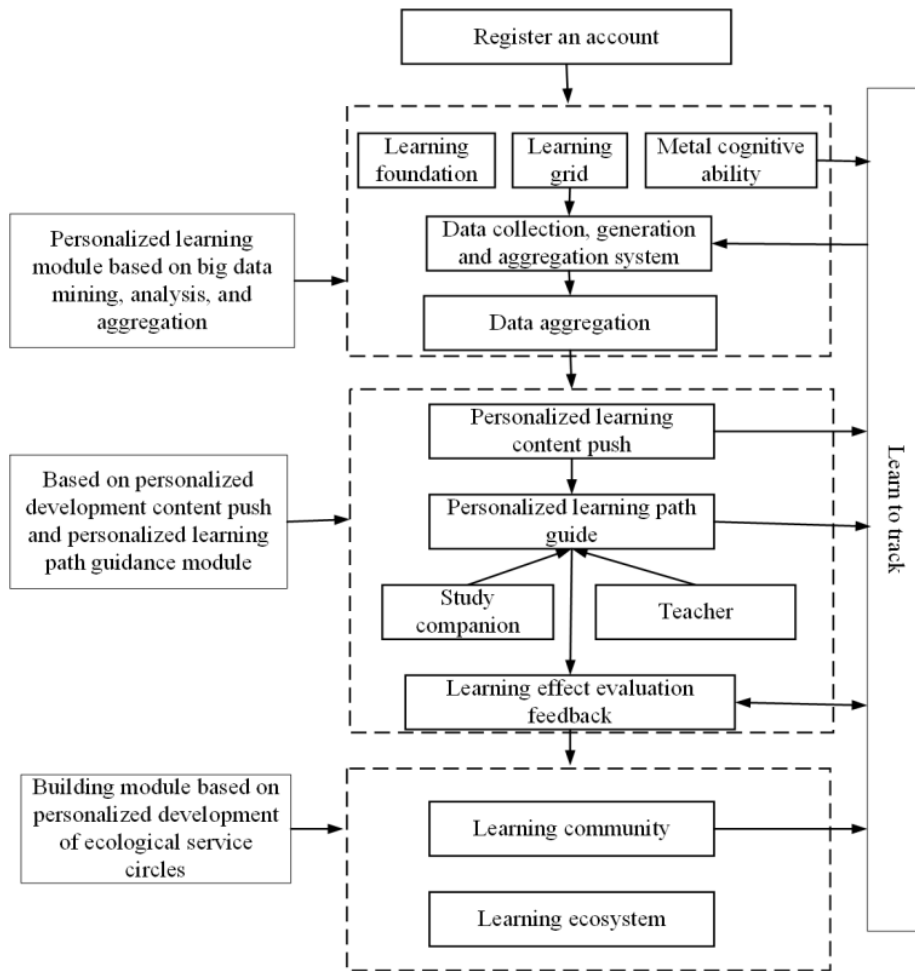


Figure 4. Personalized learning service model

4.3. 5G+Campus Intelligent Management

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Through expert interviews, we can get the development and reform of online education application scenarios and learning and teaching models, and promote the intelligent development of online education.

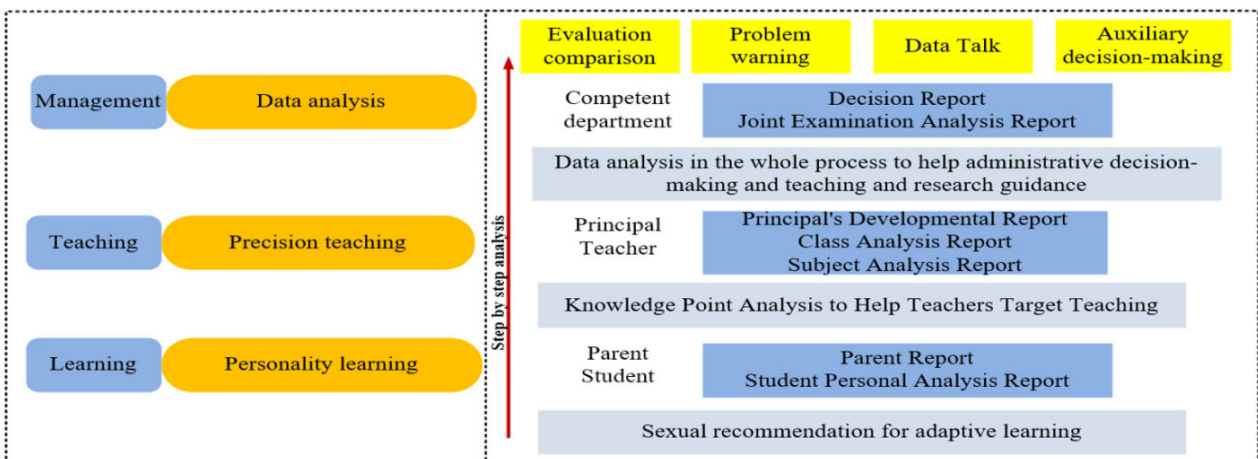


Figure 5. Intelligent Application Of Online Education

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5. Conclusion

This study mainly takes the current situation of online education in Guangzhou University, the source of educational change and the existing problems of online education under the new crown epidemic as the research core. Through literature analysis, questionnaire survey, case analysis and expert interviews, it explores the motivation of online education development and change under the background of large-scale online education in the 5G era and effective strategies to solve the problems of online education under the new crown epidemic. Combining with the development trend and national conditions of online education in China, this paper puts forward specific suggestions from several aspects to promote the development of online education in other colleges and universities in the Guangzhou region of China.

The results show that the root of educational change is that online education is an important symbol to promote the new ecology of smart education in the 5G era. The integration and upgrade of 5G communication technology and smart information technology promotes the optimization and upgrade of various elements within online education, promotes the change of online education application scenarios and teaching modes, and gradually forms a new pattern of online education.

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