

# Based on 5G Smart Education to Achieve Education Equality and Wisdom

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**Abstract:** With the help of 5G technology, the status quo of online classroom is rapidly evolving, and universities are actively exploring how to use this technology to create a more innovative and intelligent teaching environment. Through the creation of virtual classroom teaching, real-time evaluation, digital campus facilities and campus management, build a new scenario of smart campus and smart management, and continue to improve the construction of smart campus.

**Keywords:** 5G; Colleges and universities; Smart campus.

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## 1. Introduction

Due to the problem of economic development, rural and remote areas, lack of teacher resources and backward teaching facilities, even the nine-year compulsory education of students cannot be satisfied. Students in developed cities, on the other hand, enjoy the treatment of high-quality teachers and constantly upgrading educational facilities to receive quality education. Compared with developed cities, children in rural areas have been receiving inferior education and perpetuating the low quality of rural residents, resulting in a long-term urban-rural gap. Therefore, the 5G smart education model will become a hot education model in the education industry.

## 2. 5G smart Education Background

The traditional teaching mode generally means that students study in school, while parents work at home, and can not take good care of their children, thus pulling away the feelings between parents and children, and also leading to all the children in school parents do not know, which leads to a lot of tragedies. Traditional classroom teaching mode is very boring, students can not listen to and sleepy, resulting in low scores, teachers and students are under great pressure, which will have a great impact on the healthy growth of students' physical and mental health. The school's "no cell phone on campus" policy greatly limits the way students deal with the demands of school life.

And nowadays education is not only about grades, but also about the comprehensive training of students. The requirement is not only for students to know why, but also to know why. 5G+AR technology, also known as augmented reality technology, is the use of computer-generated a realistic virtual environment, and through a variety of sensing equipment, to create a technology that allows users and the environment to directly interact naturally. As a learning that requires real situational experience, if AR technology is used, the image of the learning object can be displayed, the understanding and grasp of the learning content can be deepened, and the learning efficiency of students can be improved.

## 3. Significance and Purpose of Information Technology in Virtual Classroom

Break through the shackles of 4G plane and realize the restoration of real classroom through online courses: create a mobile classroom, so that students can share the objective environment of the teacher, and let students feel the super-real classroom environment. Break through the limitations of time and space to achieve regional equality of education resources: 5G smart education can bring high-quality teachers' teaching resources to a large number of students at the same time, further avoiding the drawbacks of no communication or lack of communication between students and teachers. The combination of hardware and software can realize dynamic classroom supervision and analysis: through the hardware screen recording and big data analysis technology, the students' class status can be dynamically supervised, and the students' learning attitude, efficiency and status during class can be flexibly and accurately understood, such as the head up rate, the nose down rate, and the writing of notes

Virtual reality technology provides a platform for the development of quality education: using AR to simulate reality and 5G data high-speed communication technology, the teaching classroom is transferred from the classroom to reality, so that students can see more things they have never been in static distance, and expand their vision. At the same time, virtual reality technology can enable students to contact some things in a safer environment, such as physical experiments, chemical experiments and other academic experiments, as well as close observation of animal and plant habits and living conditions. Transfer the teaching classroom from the classroom to the reality, the textbook knowledge becomes more vivid, more vivid and real, so that students can effectively learn, close to the reality and better use of knowledge, avoid talking on paper.

Reduce regional differences in educational resources: Due to economic development problems, rural and remote areas are poor in teacher resources and backward teaching facilities, and even students' nine-year compulsory education cannot be satisfied. Middle school students in developed cities enjoy the treatment of high-quality teachers and constantly upgrading educational facilities to receive quality education. Compared with developed cities, children in rural areas have been

receiving inferior education and perpetuating the low quality of rural residents, resulting in a long-term urban-rural gap. This project uses 5G+AR technology to simulate real education scenes across regions and time, so that rural students can also receive high-quality teaching resources in remote areas, and realize the equality of educational resources with developed cities.

Reform the way of education: In order to solve the problem of written expression of traditional education, oral teaching of listening and speaking between students and teachers, and knowledge staying in the classroom. This project uses AR simulation reality and 5G data high-speed transmission technology to transfer the teaching classroom from the classroom to the reality, and the textbook knowledge becomes more vivid and real, so that students can effectively learn, close to the reality and better use of knowledge, avoid talking on paper. Improve the efficiency of teaching and learning: Use the characteristics of 5G high efficiency and low delay to detect students' learning status in real time, timely remind students who are distracted or straying, and effectively improve students' learning efficiency and teachers' teaching efficiency.

## **4. Teaching Content and Methods of Virtual Classroom Courses Based on 5G Technology**

### **4.1. 5G enables situational experiential teaching and builds new scene teaching of smart teaching**

The application of 5G technology to build a smart campus can make full use of the positive role of 5G in smart teaching, and create a new scene of smart teaching through remote interactive teaching, VR/AR situational experiential teaching and other forms. First of all, the use of 5G technology to enhance mobile broadband application scenarios can stably transmit high-definition video and achieve remote interactive teaching. Teachers can use intelligent terminal equipment to securely, reliably and stably transmit teaching information resources to the cloud, breaking through time and space constraints, and conducting synchronous teaching in multiple locations and classrooms. At the same time, with the support of the platform to build a new long-distance interactive teaching model. Secondly, teachers can also use the high-speed transmission of 5G technology, combined with information technologies such as artificial intelligence and meta-universe, to create virtual teaching scenarios and provide students with immersive learning experiences. Through VR/AR and other mobile wearable devices, enhance the enthusiasm of students to participate in teaching and deepen the interaction between teachers and students. Situational experiential teaching can create a strong intelligent teaching atmosphere and create a more vivid and interesting learning environment for students.

### **4.2. 5G enabled process teaching evaluation to build a new scene of wisdom assessment**

In the construction of smart campus, the application of AI is regarded as one of the future development directions. Combined with 5G technology, more efficient data collection and transmission can be achieved, providing a broader space for the application of AI in education. Especially in teaching evaluation, the application of 5G technology can realize data-

oriented and automated job analysis and student learning level assessment, and further promote the improvement of intelligent teaching links. Universities can use AI cameras and 5G technology to achieve real-time collection and transmission of teaching data, as well as comprehensive monitoring and evaluation of the teaching process, so as to promote the improvement of teaching quality. This kind of intelligent teaching evaluation can not only comprehensively feedback the teaching results, but also promote the continuous improvement of the teaching process, promote the construction and improvement of smart campus, and the efficient application of 5G technology.

### **4.3. Build a platform for sharing educational resources and promote the construction of a lifelong learning society**

The "Guiding Opinions on Strengthening the Construction and Application of online learning Space" issued by the Ministry of Education emphasizes that it is necessary to accelerate the construction of a learning society in which everyone can learn, learn everywhere, and learn all the time. With the comprehensive popularization and application of 5G technology, online learning will break the restrictions of time and space, ubiquitous learning will be widely realized, and the concept of lifelong learning will be deeply rooted in people's hearts. The cutting-edge technologies such as big data, artificial intelligence and cloud computing developed by universities in collaboration with several major telecom operators will better enable the development of information technology in higher education and accelerate the construction of a learning society. Among them, learner-centered personalized learning will become a prominent feature of the learning society. The personalized autonomous learning platform will enable learners to obtain the corresponding image learning data and image classroom data according to their needs, and customize the data for students' personalized learning needs, including knowledge graph and automatic course intelligent recommendation. Mobile learning will support students' learning in remote online classes and meet the needs of students' autonomous and adaptive learning. In the future, the school will become a common virtual learning field in theory, and people with learning needs can carry out personalized learning through the open interface of the system, so as to create a new form of future learning. The unique advantages of 5G technology are applied to adaptive learning, which will serve as a starting point for learners to achieve personalized learning and help analyze students' learning status.

For example, through the use of AI face recognition technology and big data analysis technology, with the help of classroom high-definition cameras to capture and analyze the behavior, body language, movement expression and other data of teachers and students in the teaching process, you can deeply understand the students' course learning interests. By analyzing the data of students' classroom performance, participation, behavior, learning preferences, attention and academic performance, we can build personalized learning situations for students, provide them with learning content that meets their expectations, stimulate their learning motivation and efficacy, and meet their personalized learning needs.

#### **4.4. Build the real integration of virtual teaching and physical classroom teaching with the help of teaching resource library**

With the support of 5G technology, colleges and universities can build a more intelligent education platform, achieve the rapid transmission of 4K and 8K ultra-high-definition videos, and provide students with a richer learning experience. This provides an important opportunity to promote the integration of virtual teaching and physical classrooms. Colleges and universities should accelerate the construction of relevant VR resource libraries, and create a more real and vivid learning experience by constructing rich virtual teaching resources. At the same time, the integration of other information means and tools, real-time online interaction and online laboratory, to further improve the teaching effect.

In the teaching process, the principal role of teachers and students is very important. The teacher is no longer a unilateral mechanical transfer of knowledge, but a guide to learn and grow together with students. Teachers should be humble, willing and open to the teaching process, giving students encouragement, listening, eye contact and guidance. Pay attention to students' knowledge background, respect students' subjective participation consciousness, truly treat students as students, lead and inspire them to ask questions.

In this process, students should take the initiative to screen and screen the information resources provided by teachers on the basis of their own knowledge reserves. By processing and adjusting our own knowledge structure, we construct a new knowledge theory module. Students' self-learning ability and information literacy have become particularly important, and they need to have the ability to actively screen and screen information in order to build a more perfect knowledge structure.

### **5. How 5G Technology Supports the Construction of Smart Campus**

#### **5.1. Establish a sound management mechanism.**

Clear goals: Colleges and universities need to clarify the specific goals of smart campus construction according to their own development needs to ensure the deep integration of technology application and education and teaching. Scientific plan: The construction plan of smart campus should be based on actual needs, combined with the advantages of 5G technology, scientific planning to ensure the feasibility and foresight of the plan. Multiple collaboration: Strengthen exchanges and cooperation between professionals, administrators, teachers, students and other parties inside and outside the school to form consensus and ensure that the direction and goal of smart campus construction are fully supported and implemented.

Integration and upgrading of network infrastructure. 5G network deployment: Colleges and universities should speed up the construction of 5G network base stations and the deployment of intelligent equipment to achieve full coverage of high-speed networks inside and outside the campus, and provide solid network support for various applications in the smart campus. Multi-network integration: Through technological innovation, to achieve the efficient integration of wired and wireless networks, improve network stability and data transmission rate, and meet the data transmission

needs of high-density and large-traffic smart campus. Standardization and integration of data information. Develop unified standards: Universities need to develop unified standards for data collection, storage, management and use to ensure the accuracy, security and effectiveness of data. Channel: Establish an efficient information integration platform, break the information island, realize the sharing and efficient use of data resources, and support the deep integration and collaborative work of various business systems on the smart campus.

Support platform and business system construction. Build an integrated service platform: Through 5G technology, build an integrated service platform for education, teaching, scientific research management, campus life, etc., to realize the integrated application of resources and the convenience of services. Business system innovation: Relying on the integrated service platform, develop new teaching, management and service applications that meet the needs of future education, and promote the innovation of education and teaching methods.

#### **5.2. Improve the information technology literacy of teachers and students, and participate in the construction of smart campus**

As an important participant in the construction and operation of smart campus, the information technology literacy of all teachers and students has a non-negligible impact on the application of 5G technology and the smooth operation of smart campus. Therefore, colleges and universities should adopt various ways, such as training, practical activities and collaboration, to comprehensively improve the information technology literacy of teachers and students, stimulate their enthusiasm to participate in the construction of smart campus, and promote the smooth implementation of the project.

For teachers, universities can help them master the theoretical knowledge and practical application skills of 5G technology through internal training, online learning and external exchanges. For teachers of different disciplines, colleges and universities can organize specialized information technology training, invite industry experts to give lectures, and innovate training forms to stimulate teachers' enthusiasm for learning and encourage them to carry out practical exploration. In addition, teachers can be organized to participate in skills competitions to promote their information technology literacy.

For students, colleges and universities should strengthen their training and practical activities on the basis of improving teachers' information literacy. For non-information technology students, various forms of training should be provided to enable them to master the basic knowledge and application skills of 5G technology. For students majoring in information technology and related majors, colleges and universities should encourage them to play the "peer effect", cooperate with other majors, jointly promote the process of smart campus construction, and apply the knowledge in practice to improve the overall level of information technology literacy.

### **6. Concluding Remarks**

With the support of 5G technology, universities can build new scenarios such as smart teaching, smart assessment and

smart management, so as to continuously promote the construction of smart campus. In order to solve the various challenges faced by traditional education in colleges and universities, we must deeply analyze the root causes of the problems and make targeted use of 5G technology to achieve popularization and intelligence of education. In the journey of the new era, colleges and universities should shoulder the fundamental mission of cultivating morality and cultivating people, and the construction of smart campus has become an indispensable support for this mission. Therefore, colleges and universities should grasp the opportunities brought by the development of 5G technology, deeply explore the construction path of "5G+ smart campus" on the basis of the actual situation of the school, and comprehensively innovate the education model to form a coordinated promotion situation. By making full use of 5G technology, universities will be able to establish a good atmosphere for the application of 5G technology, promote the construction of smart campuses to achieve more significant results, and provide

better support and guarantee for the training of future talents.

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