

The Application and Development of Remote Sensing Virtual Teaching and Research Section in Higher Education

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Abstract: With the advancement of educational informatization,the application of remote sensing virtual teaching and research section is more and more extensive in college teaching.The construction of remote sensing virtual teaching and research section is an important work in the construction of higher educational informatization,and its construction level directly affects the teaching quality of colleges and universities.Taking remote sensing as an example,this paper summarizes and analyzes the development history,organizational structure,content,characteristics and innovation of remote sensing virtual teaching and research section. On this basis,it puts forward the application and development of remote sensing virtual teaching and research section in higher education,hoping to provide reference for the construction of remote sensing virtual teaching and research section in universities.

Keywords: Remote sensing virtual teaching and research section;Higher education;Application;Development

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1. The Construction Background of Virtual Teaching and Research Section

With the rapid development of information technology,especially the extensive application of Internet,big data,cloud computing,artificial intelligence and other technologies,higher education is experiencing an unprecedented change.The traditional education model,teaching method and teaching resource allocation have been difficult to meet the needs of talent training in the new era.Under this background,the virtual teaching and research section came into being and has become an important direction for the development of higher educational informatization.

The construction background of virtual teaching and research section originates from the desire for high-quality educational resources.As an important base for cultivating high-quality talents,the quality of higher education is directly related to the development of the country and the progress of the society.However,restricted by many factors such as region,economy and teachers,the distribution of educational resources is not balanced among different regions and universities.using information technology,the virtual teaching and research section can integrate and share high-quality education resources,break the limitations of time and space,and provide more equitable and high-quality education opportunities for the majority of students.Secondly,the construction of virtual teaching and research section is also an inevitable trend in the development of higher educational informatization.Informatization is not only the requirement of The Times,but also an important symbol of educational modernization.Through the construction of virtual teaching and research section,colleges and universities can make full use of information technologies to innovate teaching mode,teaching method and teaching evaluation system,and improve teaching effect and learning experience.

2. The Development History and Organizational Structure of Remote Sensing Virtual Teaching and Research Section

The early remote sensing teaching was mainly relied on traditional classroom teaching,and supplemented by a few experiments

and practical operations. However, with the continuous progress of remote sensing technology and the expansion of its application fields, the traditional teaching mode has been difficult to meet the learning needs of students. In order to better train students' practical ability and innovative thinking, colleges and universities begin to try to combine remote sensing technology with teaching, and build remote sensing virtual teaching and research section. The establishment of virtual teaching and research section makes remote sensing teaching break through the limitations of time and space, and provides students with more abundant and diversified learning resources and learning methods. With the continuous progress of technology, remote sensing virtual teaching and research section has experienced the development process from simple online resource sharing to complex teaching simulation and emulation, and then to the intelligent and personalized teaching.

Its organizational structure covers several key parts. Firstly, the teaching management team is responsible for the overall planning and operation management to ensure the quality of teaching. Secondly, the rich teaching resource library and online teaching platform provide diversified learning resources to support the independent learning of students. The practical teaching system allows students to do practical training in virtual environment through virtual simulation technology. In addition, the Research and Innovation platform encourages students to participate in scientific research activities and cultivate innovative abilities. Finally, the International Cooperation and Exchange Center promotes the international development of remote sensing education and strengthens international cooperation and exchange.

3. Content

The core construction content of its application and development in higher education covers multiple aspects and aims to build a comprehensive and multi-level remote sensing education environment to improve teaching effect and cultivate students' comprehensive abilities. The primary task of its construction is to integrate and optimize teaching resources, which includes collecting and sorting out excellent remote sensing teaching materials, courseware, experimental data and other resources at home and abroad to form a rich and diverse teaching resource library. At the same time, by classifying, labeling, and intelligently recommending these resources, it is convenient for teachers and students to quickly find the required teaching materials to improve teaching efficiency and learning experience of students.

Secondly, it pays attention to the construction of online courses. By recording high-quality video courses, making exquisite courseware and providing rich online learning resources, it can make students to learn independently anytime and anywhere. In addition, it is also the key constructing a real-time interactive teaching platform. Online live broadcast, online discussion, online Q&A and other ways can enhance the interaction and communication between teachers and students, and improve the teaching effect. Thirdly, remote sensing technology has strong practicability and applicability, so virtual simulation experiment and practice teaching system is an important content of the construction of remote sensing virtual teaching and research section. The construction of highly simulated virtual experiment environment can make students process, analyze and interpret remote sensing data in the virtual environment, so as to cultivate students' practical ability and innovative thinking. At the same time, the construction of practical teaching system can combine theoretical knowledge with practical operation to improve students' comprehensive application ability.

4. Characteristics and Innovation

It makes full use of the integration advantages of remote sensing technology and information technology, and realizes the digitalization, networking and intelligent management of teaching resources by using advanced technologies such as cloud computing, big data and artificial intelligence. This integration not only improves the utilization efficiency of teaching resources, but also provides teachers and students with more convenient and efficient learning and teaching experience. It breaks through the shackles of traditional education mode, takes learners as the center, and focuses on cultivating students' ability of independent learning, collaborative learning and innovation. By building an open, sharing and interactive online teaching platform, it provides students with personalized learning paths and diversified learning methods, and stimulates students' learning interest and enthusiasm; It has adopted a teaching mode that combines online and offline teaching, and achieved an organic combination of theory and practice through various methods such as online courses, real-time interactive teaching, virtual simulation experiments and other ways. The innovation of this teaching mode not only improves the teaching effect, but also cultivates the students' practical ability and problem-solving ability. It pays attention to the all-round development of students, and cultivates students' innovative spirit, international view and sense of social responsibility through scientific research innovation, international exchange and social practice.

5. Challenges

With the rapid development of information technology and the wide application of remote sensing technology, it plays an increasingly important role in higher education. However, in the process of its application and development, it also faces many

challenges. The first is technological updates and investment costs. Its construction and development cannot be separated from advanced information technology and the support of remote sensing technology. However, the speed is extremely fast to upgrade these technologies, requiring the department to continuously invest in hardware and software upgrades. For many colleges and universities, it is a huge economic pressure. It is a major challenge for it how to maintain the progressiveness of technology and the high quality of teaching under the support of limited funds. The second is the integration and sharing of educational resources. It needs to integrate various educational resources, including teaching materials, courseware, experimental data and so on. However, due to copyright, profit distribution and other issues, it is difficult to integrate and share resources. It is an important problem that it needs to solve how to balance the interests of all parties and realize the effective integration and efficient utilization of resources. The third is teaching quality monitoring and evaluation. Online teaching and virtual experiment teaching are important components of remote sensing virtual teaching and research section. However, it is an urgent problem to be solved how to guarantee the quality of these teaching, and how to ensure that students can truly grasp the knowledge and skills. It is one of the challenges that it faces to establish a scientific and effective teaching quality monitoring and evaluation system to evaluate and improve the teaching process and teaching effect regularly. The fourth is students' independent learning and supervision. It advocates students' independent learning and collaborative learning. However, it is a problem that needs attention how to ensure that students are really engaged in learning and avoid the phenomenon of formalism and "skipping school". It is one of the problems that it needs to solve to establish an effective learning supervision and incentive mechanism, guide students to actively participate in learning activities and improve the effect of autonomous learning.

6. Conclusion

With the rapid development of information technology and the deepening of reform of higher education, remote sensing virtual teaching and research section, as a new education mode, has shown its unique advantages and great potential in higher education. This paper first reviews the background of the construction of virtual teaching and research section and points out that it is the inevitable result of the development of educational informatization. Then, it elaborates the development and organizational structure of remote sensing virtual teaching and research section, and reveal its evolutionary process from preliminary exploration to gradual improvement. In terms of the content, the remote sensing Virtual Teaching and Research section not only pays attention to resource integration and platform construction, but also emphasizes the innovation of teaching mode and the quality improvement of talent training. Its feature and innovation lie in the deep integration of advanced remote sensing technology with education and teaching, providing a new and highly simulated learning environment for teachers and students.

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