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Exploration of Teaching Computer Information Technology Course in Universities under Big Data

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Abstract: ***As a key link in this wave, the teaching exploration of the "Computer Information Technology" course in universities is not only related to the cultivation of technical talents, but also an important force to promote the development of the entire society. Based on this, the article explores the teaching of "Computer Information Technology" course in universities under big data, analyzes the significance of teaching "Computer Information Technology" course in universities under big data, elaborates on the teaching problems of "Computer Information Technology" course in universities under big data, and provides teaching strategies for "Computer Information Technology" course in universities under big data, aiming to provide useful insights and suggestions for the teaching of computer information technology courses in universities and lay a solid foundation for cultivating future technical talents.***

Keywords: Big data; Computer information technology; Course teaching.

1. Introduction

In today's society, big data has become a key factor driving technological innovation and economic development. Therefore, exploring the teaching mode of computer information technology courses in universities is not only an urgent need to improve education quality and adapt to technological development trends, but also an important task to cultivate future technical talents and meet social needs. This teaching exploration is related to the comprehensive improvement of students' technical literacy and innovation ability, and also affects their adaptability and problem-solving ability in complex technological environments in the future.

2. Teaching Significance of the Course "Computer Information Technology" in Universities Under Big Data

2.1 Enhance Students' Innovation Ability

The computer information technology course under the background of big data stimulates students' curiosity and exploratory desire by providing cutting-edge technological knowledge and practical opportunities. Teachers inspire students' enthusiasm for exploring unknown fields by teaching the latest theories and technologies in areas such as cloud computing, artificial intelligence, and machine learning. The teaching methods such as case analysis and project practice in the course can allow students to directly encounter real-world problems and encourage them to explore innovative solutions using the knowledge they have learned. Improving students' innovation ability is also reflected in cultivating their critical thinking. In curriculum teaching, teachers should encourage students to conduct critical analysis of existing technologies and theories, constantly raise questions, and explore new methods to solve problems. For example, when teaching a specific algorithm or technology, teachers can guide students to analyze its strengths and limitations, encourage students to think about how to improve or use it to solve new problems.

2.2 Cultivate Practical Application Skills

The teaching method of the course "Computer Information Technology" in universities focuses on cultivating students' practical application skills. Teachers provide students with opportunities to apply theoretical knowledge to practical problems through teaching methods such as laboratory classes, project-based courses, and internships. For example, students can exercise their programming skills by designing and developing a practical application, or improve their database management skills by building and managing a database system. This practical teaching method not only helps students to deeply understand the course content, but also cultivates their problem-solving ability and innovative thinking, enabling them to better adapt to the challenges of future careers. The course also emphasizes the cultivation of teamwork and communication skills. In actual big data projects, multiple personnel often need to work together to solve complex problems. By completing projects and experiments with classmates, students will learn how to collaborate and communicate effectively with others to achieve project goals together. This kind of teamwork and communication skills is equally crucial in one's career.

3. Teaching Issues of Computer Information Technology Course in Universities under Big Data

3.1 Disconnected Technology Application

The problem of disconnection between technological applications is mainly manifested in the significant gap between teaching content and current industry technological needs, which makes it difficult for students to establish effective connections between theoretical knowledge and practical applications. In today's rapidly developing big data technology, traditional teaching methods and outdated technological content are still commonly used in courses. This not only fails to meet students' learning needs for modern computer technology, but also seriously hinders the cultivation of students' innovation and practical operation abilities. At the same time, due to the lack of sufficient integration of emerging technologies such as cloud computing, machine learning, artificial intelligence, etc., the technologies learned by students in the classroom often have significant differences from the technologies used in actual work by enterprises. This disconnect poses significant employment challenges for students after graduation. The problem of technological disconnection is also reflected in the current teaching process of computer information technology courses in universities, which overly focuses on imparting theoretical knowledge and lacks practical teaching for big data application scenarios. In this situation, although students are able to master a large amount of theoretical knowledge, they appear powerless when applying these theories to solve practical problems. For example, in data mining and data analysis courses, students often only learn the theoretical part of relevant algorithms and lack experience in applying these algorithms to real datasets. Due to the lack of practical opportunities, students find it difficult to understand and master the actual performance and potential problems of these algorithms in processing big data.

3.2 Outdated Evaluation Methods

The backwardness of evaluation methods is reflected in the neglect of students' interdisciplinary abilities. The integration of computer information technology with other disciplines is becoming increasingly close, and students need to possess interdisciplinary knowledge to adapt to the needs of modern society. However, the existing evaluation system often only focuses on the knowledge and skills of a single subject, neglecting the cultivation of students' comprehensive qualities. For example, for a course project involving data analysis, the evaluation often focuses only on technical implementation, without considering how students can apply the technology to practical business scenarios. The outdated evaluation methods are also reflected in the lack of alignment with industry standards and demands. With the rapid development of big data technology, the industry's requirements for professional talents are constantly changing. However, many universities' evaluation systems have not kept up with this change in a timely manner, resulting in students' learning outcomes not meeting the actual needs of the industry. For example, some courses overlook the assessment of knowledge on big data security and privacy protection, which is an extremely important part of today's big data field. The backwardness of evaluation methods is also reflected in the neglect of students' personalized and differentiated needs. Each student's learning background, interests, and abilities are different, but traditional assessment methods often have a one size fits all approach and cannot effectively stimulate each student's potential. For example, some assessment methods fail to provide sufficient flexibility to adapt to the learning needs and styles of different students, resulting in some students' potential not being fully realized.

3.3 Lack of Training Resources

In the current education system, although theoretical teaching has received sufficient attention, the lack of practical training resources has become a bottleneck in teaching quality. The aging and lack of laboratory facilities is a prominent issue. Many computer laboratories in universities have outdated equipment that cannot support advanced big data processing and analysis tasks, making it difficult for students to learn and practice the latest big data technologies in laboratory environments. For example, the lack of high-performance computing resources and large-scale storage systems makes it difficult for students to effectively conduct experiments on large-scale data processing and complex algorithms. The lack of practical training resources is also reflected in the scarcity of internship and practical opportunities. Compared to theoretical learning, practical experience is crucial for computer science students, but many students have little opportunity to experience real work environments during their school years. Courses related to big data often lack collaboration with enterprises, and students lack opportunities to apply big data technology in real business scenarios. For example, when students are learning data mining and machine learning, they often can only conduct experiments on simplified datasets and cannot experience the complexity of data in real business and the challenges in processing. The lack of practical training resources is also reflected in the insufficient practical experience of teachers. In the current university teaching staff, there is a relatively high proportion of teachers with rich theoretical knowledge, but there are relatively few teachers with rich practical experience and industry background. This makes it difficult for teachers to closely integrate theoretical knowledge with practical applications in the teaching process, and to provide students with real industry case analysis and practical guidance. For example, some teachers may have a deep understanding of big data theory and algorithms, but due to a lack of practical project development experience, they are unable to provide students with specific guidance on how to apply theory to practical projects.

4. Teaching Strategies for the Course "Computer Information Technology" in Universities Under Big Data

4.1 Aligning with Industry Demands and Updating Technical Courses

In the era of big data, the field of computer information technology is constantly developing and changing, and the requirements of enterprises and industries for professional skills are also constantly upgrading. Therefore, the teaching content of universities needs to keep up with the pace of industry development, be updated in a timely manner, and ensure that the knowledge and skills learned by students can meet the needs of the future workplace. The update of teaching content should be based on in-depth analysis and prediction of industry development trends. This requires close cooperation between universities, enterprises, and industry experts to jointly explore and analyze the latest technological trends and industry demands, and adjust and update course content based on this. For example, courses in data science and big data analysis should include the latest data mining techniques, machine learning algorithms, as well as the application of emerging technologies such as cloud computing and the Internet of Things, to ensure that students can master cutting-edge technologies and methods in the industry. Curriculum updates should not only focus on supplementing theoretical knowledge, but also strengthen the cultivation of practical skills. To this end, universities need to build laboratories and training bases that are similar to actual work environments, provide practical project cases, and allow students to learn and practice in simulated work environments. By participating in the development of real projects, students can better understand the application of theoretical knowledge in practical work and develop the ability to solve practical problems. For example, teachers can introduce actual projects from enterprises as part of the curriculum, allowing students to develop projects under the guidance of their mentors. This not only enhances students' practical skills, but also strengthens their project management and teamwork abilities. Updating technology courses should also include innovative teaching methods. Traditional teaching methods often focus on imparting theoretical knowledge, while in the era of big data, more emphasis is placed on students' active learning and the cultivation of critical thinking. Therefore, the teaching method should shift from one-way teaching to interactive and project-based teaching. Teachers can stimulate students' interest in learning, improve their participation and innovation ability through teaching methods such as case analysis, group discussions, and flipped classrooms. For example, teachers can analyze real business cases to encourage students to explore how to apply learned technologies to solve practical problems, or to complete a project task through teamwork, thereby improving students' practical operation and teamwork abilities.

4.2 Reforming Evaluation Methods to Enhance Feedback Efficiency

The core of the strategy of "reforming evaluation methods and improving feedback effectiveness" lies in using innovative evaluation methods to more accurately measure students' learning outcomes, while providing feedback that is helpful for students' learning and growth. In the era of big data, the teaching of computer information technology should not only focus on students' mastery of technical knowledge, but also pay attention to their ability to analyze and solve problems, as well as the cultivation of innovative thinking. Therefore, the evaluation method should shift from traditional written tests and mechanical memorization to more focused on practical operation, innovative practice, and comprehensive quality evaluation. The reform of evaluation methods should include the assessment of students' practical operational abilities. When assessing students, teachers should not only evaluate their mastery of theoretical knowledge, but also assess their ability to apply theory to practice. For example, teachers can use a project driven approach to involve students in real or simulated projects, and evaluate their practical operational abilities based on the completion of the projects. In this evaluation mode, students can not only learn how to apply technical knowledge, but also cultivate comprehensive abilities such as project management, teamwork, and problem-solving. The reform of evaluation methods should also include the cultivation of students' innovative ability and critical thinking. In the field of computer information technology, innovation is the key to driving technological development. Therefore, the evaluation method should encourage students to engage in innovative thinking and practice. For example, teachers can design open-ended topics for students to explore independently, or encourage students to improve and innovate existing technologies. Through this assessment method, students can also learn and grow through exploration and innovation. The reform of evaluation methods also requires strengthening the continuous evaluation and feedback of students' learning process. Assessment should not only occur at the end of a semester or course, but should be a continuous process. Teachers can track students' learning process through regular assignments, quizzes, classroom discussions, and provide timely feedback and guidance. This evaluation method can help students timely understand their learning status, adjust their learning methods, and promote the improvement of learning outcomes.

4.3 Establish a Practical Platform to Supplement the Resource Gap

The core of the strategy of "adding practical platforms to supplement resource gaps" lies in establishing more practical platforms and providing necessary resource support to enhance students' practical operation ability and innovative thinking. In the era of big data, simply imparting theoretical knowledge is no longer sufficient to meet the increasingly complex technological challenges and industry demands. Therefore, universities need to build laboratories, training bases, and project practice platforms that are similar to modern work environments, so that students can learn and practice in a more realistic work environment. Laboratories and training bases should be equipped with the latest computer hardware, software, and big data processing equipment to enable students to learn the latest technologies through practical operation. For example, by setting up a big data laboratory with real data processing capabilities, students can learn how to process and analyze large-scale datasets, thereby cultivating their data science and analysis skills. Universities should also work closely with enterprises and industries to jointly develop practical projects and provide students with practical opportunities. By participating in these projects, students can not only apply theoretical knowledge to practical work, but also understand the latest trends in the industry, thus better preparing themselves for their careers. For example, universities can collaborate with local technology companies to involve students in real software development or data analysis projects, in order to enhance their technical and project management skills. With the development of network technology, online platforms can provide more diverse learning resources and practical opportunities, and creating online practice platforms is also an important means to supplement resource gaps. For example, universities can establish virtual laboratories that allow students to remotely access experimental equipment and software for online experiments and project development. This can not only expand the coverage of practical teaching, but also provide more flexible learning methods. The establishment of practical platforms also requires attention to the personalized and differentiated practical needs of students. Different students have different interests and expertise, so practical platforms should provide diverse projects and activities to meet the needs of different students. For example, teachers can set up practical projects in different fields, such as artificial intelligence, machine learning, network security, etc., allowing students to choose suitable projects based on their interests and future career plans.

5. Conclusion

The article not only explores the significant importance of teaching the course "Computer Information

Technology" in universities in the era of big data, but also provides valuable insights for future teaching models. With the continuous development of big data technology and the increasing social demand, the teaching reform and innovation of computer information technology courses in universities have become particularly important. Future research and practice need to explore more deeply how to combine advanced technology with educational concepts, constantly update teaching content, improve teaching methods, and cultivate high-quality technical talents who can adapt to future technological challenges.

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