

The Computer Education Mode Based on Big Data Research in the Internet Age

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Abstract: In the Internet age, the application and research of big data has become increasingly in-depth. Computer education and teaching must also keep pace with the times, change the traditional teaching model, and improve the quality and level of teaching. This paper first introduces the current status of China's computer teaching model and its problems, analyzes the impact of the study of big data in the Internet age on the computer teaching model, and finally offers recommendations for building a computer education model that meets the requirements of the era of big data, to provide reference for improving the teaching quality of the computer education.

1. Introduction

With the rapid development of information technology, people have entered the era of big data. Big data is a collection of data that cannot be captured, managed, and processed using conventional software tools within a certain time frame [1]. It requires a new processing model in order to have stronger decision-making power, insight and process optimization capabilities to adapt to massive, high growth rate and diverse information assets. It can be seen that the most obvious feature of the era of big data is its efficiency. The amount of data involved and the speed of search have far exceeded what the old era can provide. This qualitative change has set new demands on modern talents and requires contemporary students to use big-time data to handle things rather than stay in the old age. The era of big data has brought profound influence on computer professional education. Therefore, the computer education should make changes in the teaching mode to adapt to the ever-changing computer industry, and computer courses can be designed as a mixed model of flipping courses as showed below in figure 1.

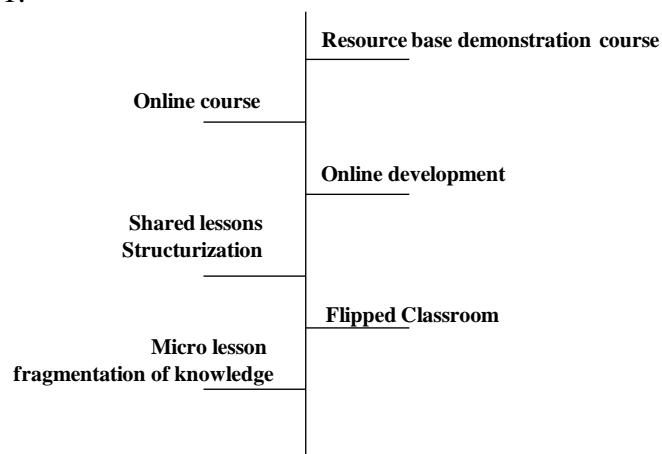


Fig.1 Curriculum design pattern

2. The Current Situation of Computer Education Mode in China

2.1 Teaching content and facilities

One of the common points of computer professional education and other majors is to focus on textbooks. However, the knowledge in textbooks is far from enough for students to participate in the

future work. In the era of big data, computer science is required to be more time-efficient and innovative than other professions, and the amount of data provided by big data is extremely huge. Therefore, the content of teaching should be changed with time and technologies in order to ensure that students can find a position in the future work. Besides, many schools have limited funds, and the investment in teaching hardware and equipment is far from the capital needed to update teaching equipment. However, students of computer majors will have to work with advanced equipment, without updated teaching facilities students could not capture the advanced technology, which will not only affect students' learning efficiency to a certain extent, but also affect students' ability to meet the needs of their future work.

2.2 Theoretical knowledge and practice

The combination of theoretical course teaching and practical teaching is the main teaching mode which adopted by the computer major. Theoretical courses are mainly based on lectures, while practical teaching is based on practical training courses [2]. And the training course is to arrange tasks and provide operation methods, with students complete the experimental tasks according to the teacher's instructions, and finally summarize them. This kind of teaching model can only enable students to master knowledge, but it is not conducive to the improvement of students' practical application ability. On the other side, giving lectures is the main mode of teaching. During the teaching process, teachers give lecture courses, while students are just loyal audiences. There are few opportunities for students to think and discuss in class, and there is almost no interaction between teachers and students. Students have no enthusiasm for lectures and no passion for participation, and have no interest in listening. In the end, they form a situation in which the teachers speak their own while students do their own affairs.

3. The Influence of the Big Data Era on Computer Education and Teaching Mode

3.1 Educational methods and environment

In the age of big data, teachers are no longer the dominators of knowledge. When compared with students, teachers may have fallen behind, and may even lag behind. But teachers have more experience than students, which is exactly what students lack and need. Therefore, teachers should shift from the frontline to the backstage, and pay more attention to the development and design of the curriculum, to help students become real masters of the knowledge. In recent years, with the rapid development of information technology, micro class, online classroom, especially the emergence of intelligent equipment, students do not have to rely entirely on teaching materials, teachers and classes to acquire knowledge, especially the emergence of the social circle and self media, makes it easier for students access to knowledge. Therefore, the change of students' learning environment means that education can really return to society and family, and education can really integrate into society and nature.

3.2 Educational philosophy and thinking

The previous education work was mainly based on the many years of teaching experience of the education administrators and excellent educators. However, these experiences are not always scientific and are not always suitable for contemporary student groups. But in the era of big data, it is possible to tap knowledge through big data, find connections, summarize laws, and formulate teaching plans that are in line with the students' reality, develop targeted teaching, and formulate teaching programs that are more in line with the characteristics of students.

3.3 Applications

Big data technology is closely related to the discipline of computer science. It plays an important role in teaching, learning, and research. Therefore, the emphasis should be on how to apply the big data research in computer professional teaching. First of all, we must analyze the impact and role of

big data teaching data sources on the profession, and then explore the teaching methods of computer professional education with the task of training professionals in local colleges and universities. Contents such as curriculum setting are finally implemented in the actual teaching process, and the teaching strategies are improved so that the teacher-student interaction and communication can be performed.

The data processing in the large data age is different from the traditional data processing, such as cloud computing, visualization processing, data collection, data storage, database technology, data mining technology, which need different computer courses [3]. Therefore, according to the needs of the society and the times, the existing related courses should be strengthened. In the teaching process, teachers should not only understand the concepts, developments, and application fields of big data to expand their professional knowledge to facilitate their advanced studies, but also research the needs and influences in today's society to teach students related technologies and improve students' learning interests, and help students adapt to the social development. Regarding the course assessment, the school assessment method, curriculum assessment method, and curriculum development environment should be improved to diversify the development, comprehensively assess professional settings and courses, provide more analysis data, and help teachers improve teaching quality.

4. The Design of Computer Education Model in the Era of Big Data

4.1 Curriculum structure

In the age of big data, combined with the internet, computer courses can be designed as a mixed mode of flipping courses, and at the same time, they can be made into micro lessons, screen lessons, etc. for classroom teaching. In order to meet the challenges faced by computer technology in the era of big data, computer education curriculum system settings should follow new ideas, and the computer professional curriculum system settings should be adjusted based on the needs of society. The purpose of professional training is to cultivate the comprehensive development of morality, intelligence, body, and beauty, which has solid mathematical and theoretical foundation, systematic computer theory knowledge, and could master computer hardware and software technology and network technology, with outstanding program design capability, network technology application ability, good humanistic quality and innovative spirit, and can engage in software design and development, network system construction and management in the era of big data, with professional skills base, innovative consciousness and better comprehensive quality.

4.2 Scientific knowledge

During the teaching process, teachers at different levels need to have a complete grasp of the knowledge of the teaching content and build a corresponding scientific knowledge map to help students quickly grasp the knowledge and improve the quality of learning. The knowledge calculation of point weights requires the use of matrix $R = r_{ij} p \times p$, where r_{ij} represents the coefficient associated with x_i and x_j , $r_{ij} = r_{ji}$. The calculation expression is as follows:

$$r_{ij} = \frac{\sum_{k=1}^n (x_{ki} - \bar{x}_i)(x_{kj} - \bar{x}_j)}{\sqrt{\sum_{k=1}^n (x_{ki} - \bar{x}_i)^2 \sum_{k=1}^n (x_{kj} - \bar{x}_j)^2}} \quad (1)$$

And each knowledge point has a weight of $r_j = \sum_{k=1}^n r_{kj}$, The knowledge points in the course are subdivided and maps are constructed, and the comprehensive scores before and after statistical layering education have improved students' overall performance.

4.3 Education strategies and methods

In the course of the basic teaching, the teacher should combine theory with practice in the course of basic teaching. Teachers should make the transition from the previous theory teaching to the later stage of the professional teaching, with the theory of practice teaching as the main theory, and the students' independent design and development as the root subject [4]. At the same time, we should pay attention to the interaction and communication between teachers and students. In the course of theory teaching, teachers should help the students understand the specific concepts, principles, basic methods and application fields of the contents of the course, and combine examples and case teaching to verify the relevant theories, so that students can really grasp the theoretical knowledge and memorizing them from the examples. In addition, the new technology related to large data should be explained in addition to the new technology, and use new methods to keep students learning enthusiasm and actively participate to improve the overall teaching quality. For example, for the introduction of computer introduction and the engineering of the Internet of things, teachers could combine the physical, video and computer with the basic knowledge of the computer to various technical products in the Internet of things, which leads to the related data collection, storage technology and data processing technology.

4.4 Interests development

According to the demand of big data era, we should scientifically guide students to learn. In the teaching of computer basic courses, we should first guide students' interest in big data to enhance students' sense of data. During this process, it could start with the problems or phenomena related to large data to arouse the students' attention to the generation, development and present situation of large data, so that students can understand the impact of large data on people's life. Teachers can start from explaining basic courses to professional courses and elective courses, so that students can grasp the connection and importance of the system setting of computer specialty courses, so as to attract students interest and help them to understand related courses of the big data and, and lay the foundation for them to study of follow-up courses and the skills training practices.

5. Summary

Big data research and applications have brought many opportunities and inspirations to the computer education model. In view of the problems in the current state of the computer education model in China and the impact of the big data era on computer education models, schools and teachers should thoroughly research the computer professional education model in the era of big data, making improvement and innovation from interests, theoretical systems, scientific practices, teaching strategies, etc. so as to provide supports for establishing a scientific and efficient computer education model.

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