Deep Integration of Information Technology and Higher Education in the Era of Big Data Era

Yimin Zhou, Qian ZHANG, Chengzong Peng

School of Cybersecurity, Chengdu University of Information Technology, Chengdu, 610225 Sichuan, China

Abstract: Under the background of BD(big data) era, modern HE(higher education) management must carry out reform and innovative development with the times, which is the inevitable development of the times and an effective way to implement the modern education strategy. The DIIT(deep integration of information technology) and HE is not the same as the simple application of educational technology, but the intersection of disciplines to form a new teaching model. At present, many universities are in the application stage, and how to move from application to integration has become a topic facing the management of colleges and universities teachers. Firstly, this paper analyzes the characteristics of the era of BD, and clarifies the connotation of the DIIT and HE in the era of BD. Then the significance of the DIIT and HE, and finally the path choice of the DIIT and HE in the era of BD is given. It aims to provide a new perspective for the integration of education and teaching with information technology.

1. Introduction

Recent years, with the advent of new information technology changes such as cloud computing, Internet of Things (IoT) and big data (BD), "internet plus" is gradually becoming the engine of rapid development in various industries and fields, leading the development direction of the times. Universities should, according to their own actual conditions and needs, keep pace with the development of educational informatization, and cultivate high-end, cutting-edge innovative talents to meet the diversified needs of the present era and lead social development[1-2]. The deep integration of information technology (DIIT) and the higher education (HE) are not as the same as the simple application of educational technology. but the intersection of disciplines to form a new teaching model. At present, many universities are in the application stage, and how to move from application to integration has become a topic facing the management of colleges and universities teachers.

2. Characteristics of he in the Era of BD

Universities should actively establish and improve the HE management system in the era of BD, integrate BD technology and innovate diversified educational management concepts and methods[3-4]. BD not only changed the traditional ideas and working ideas of HE management, but also enriched the technical means and management methods of management, accelerated the construction process of HE management system, optimized the resource reserves of HE management, and made education management develop towards informationization and networking, thus greatly improving the data level of HE management.

Modern HE management must carry out reform and innovative development with the time, which is the inevitable development of the time and an effective way to implement the modern education strategy. In order to deeply integrate HE management with BD technology, it is necessary to abandon the outdated traditional management ideas, break through the old management mode and system, and realize major changes in the management mode and management approach of HE through the introduction of information talents[5].

The application of information technology is the foundation of the transformation of educational ideas, and the effective application of information technology can help the transformation of

educational ideas. The transformation of university education ideas needs to be implemented concretely by the application of information technology, so as to ensure that advanced HE ideas can promote the development of society.

3. Significance of Diit and HE

3.1 Reform the Traditional Teaching Mode

Compared with the traditional classroom, the classroom with the integration of information technology and HE is more conducive to cooperative learning, inquiry learning and problem solving. In the DIIT and HE, information technology has the characteristics of multimedia, intelligence and virtualization, which makes it play an incomparable role in the cognition and understanding of micro-concepts in scientific disciplines. Secondly, students' autonomous learning motivation is enhanced. Students build new knowledge by connecting with curriculum resources, finishing media and cooperating with peers to complete tasks, so that China's educational informatization will approach the international advanced level as a whole, and provide solid support for realizing educational modernization[6-7].

3.2 Promote Personalized Autonomous Learning

In the era of BD, online education makes the learning process a highly personalized and active construction process, enabling students to choose learning content according to their own learning interests and hobbies. Improving the quality and fairness of education, thus providing the possibility for building an educational information system covering all kinds of schools in urban and rural areas, supporting continuing learning and lifelong education, and promoting quality education and resource popularization and sharing.

3.3 Improve Teaching Efficiency

With the arrival of the "internet plus" era, unprecedented changes have taken place in all fields of people's production and life. The Internet has quietly changed the traditional way of production and life, and the platform for knowledge acquisition has become broader, and people's ideology has gradually changed[8]. The new teaching method can make students' learning time and space more broad and free. They can preview, study and review anytime and anywhere through computers, mobile phones and other terminals, and use the limited classroom time for discussing problems and difficult problems. Formed a highly intelligent information-based learning ecological environment, and completely changed the traditional teaching and learning patterns.

4. Way of Diit and he in the Era of BD

4.1 People-Oriented

The DIIT and university education and teaching aims at improving the comprehensive ability of college students, including innovation ability, practical ability, teamwork ability, information ability, independent work ability and engineering quality, and cultivating students to become innovative and compound talents[9].

The combination of online and offline teaching mode can enable students to carry out personalized learning and effectively change the teaching methods of passive learning in traditional classrooms. Students finish the study of course content before class, and then give priority to students' discussion in class to guide students to explore knowledge. In order to realize the DIIT and education, the teaching content and rich information-based teaching resources should cooperate with each other, and the teaching materials should be the mainstay, so as to meet the needs of students' healthy physical and mental growth.

4.2 Change Educational Attitude

Many teachers believe that the traditional teaching methods are easy to master, and the effect is

not worse than that obtained by using information technology, and the use of information technology in the classroom will increase the teaching burden. Therefore, how to correctly guide teachers to love and be good at using information technology in the classroom has become an arduous task.

In order to realize the educational function of a university, we must have a good grasp of students' basic information and learning situation, and grasp students' study and life in and out of class in time. Only in this way can the school adjust various teaching activities in time to meet the actual needs of students. The innovative content of educational attitude in the era of BD is shown in Figure 1
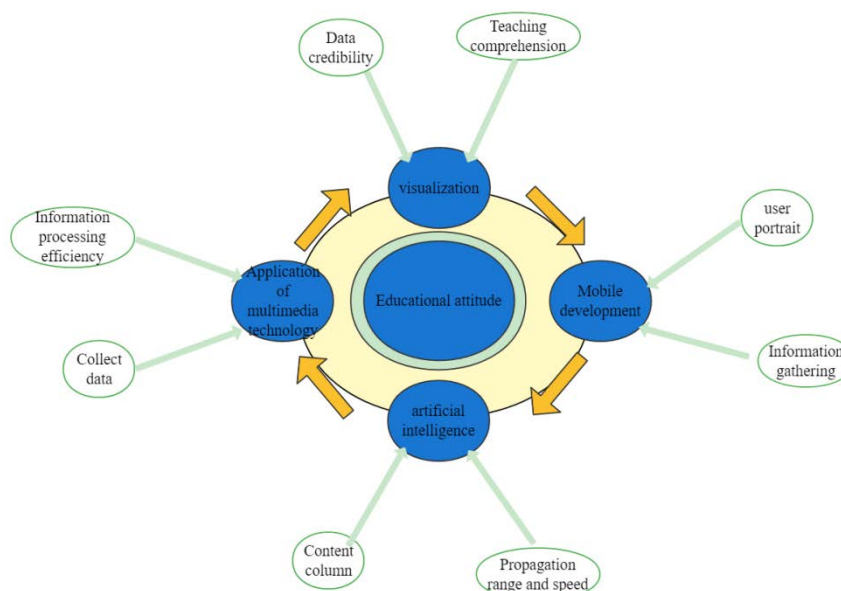

Fig.1 Innovative Content of Educational Attitude in the Era of BD

Schools should, according to the different positions and functions, arrange teaching staff to gradually form an information-based teachers' team, an information-based technical team, an information-based management team and an information-based theoretical research team through relevant theoretical study and technical training. New knowledge can be learned in advance through the online intelligent teaching support platform, so high-quality course teaching resources are the premise to ensure the smooth operation of the flip classroom teaching mode, and also a good carrier for the DIIT and HE[10].

4.3 Integrating Resources and Strengthening the Construction of Information Education

The problem existing in the traditional classroom in colleges and universities is that the classroom is basically teacher-centered, and students learn passively, so their thinking ability cannot be developed. University is to cultivate students' abilities in the future, such as autonomous learning ability, self-discrimination ability, problem analysis and solving ability, expression ability and so on. These abilities are very important for college students in their later life, which can help them face more new knowledge and new challenges. The system architecture of online education platform in the era of BD is shown in Figure 2
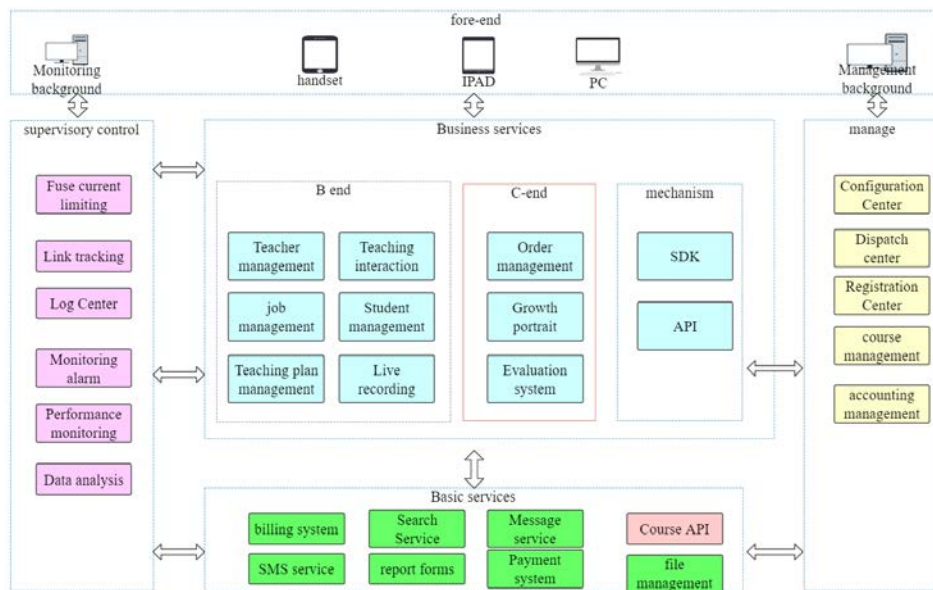
Fig.2 System Architecture of Online Education Platform in the Era of BD

Resource construction is the foundation of the DIIT and education and teaching. First of all, effectively integrate all kinds of educational resources at all levels; Secondly, constantly enrich their own MOOCS resource database, carry out reasonable cascade development and open use, learn from excellent university education development models at home and abroad. Therefore, promote the reform of teachers' preparation, teaching, counseling, evaluation and management methods. Strengthen the cultivation of talents in the construction of smart education, attract compound talents in information technology.

BD technology promotes personalized autonomous learning mode and changes the teaching form of HE. The author believes that the research on the standardized management of DIIT and HE is helpful to the reform and innovation of HE in teaching behavior, education and teaching, compilation and planning of teaching materials, and the construction of teachers. First of all, we should strengthen the HE information construction and the environment construction of the intelligent online teaching platform; Secondly, we should strengthen the construction of high-quality online course resources and realize the development and utilization of new information teaching resources under the BD environment; Finally, we should actively innovate the management system and optimize the structure of the organization team, increase efforts to expand the integration boundary of information technology and education and teaching, effectively ensure the organic integration of information technology and HE standardized management, innovate the development model of education and teaching, and integrate resources to strengthen the construction of information education.

5. Conclusions

Universities should keep pace with the development of educational informatization according to their own actual situation and needs, and cultivate high-end and cutting-edge innovative talents to meet the diversified needs of today's times and lead social development. BD not only changed the traditional ideas and working ideas of HE management, but also enriched the technical means and management methods of management, accelerated the construction process of HE management system, optimized the resource reserves of HE management, and made education management develop towards informationization and networking, thus greatly improving the data level of HE management. The deep integration of university information technology and education and teaching is a long-term and gradual process. Only by adopting objective and targeted methods according to the actual situation of education can wisdom education be integrated and developed and keep pace with the times.

References

[1] Xia Jingjing, & Zhang Qinfang. Deep integration of information technology and higher education in the era of big data. China Audio-visual Education, vol. 2021, no. 9, pp. 1, 2021.

[2] Huang Hui. Deep integration of information technology and higher education in the era of big data -- Comment on "Research on standardized management of higher education in the era of big data". China Education Journal, vol. 2021, no. 4, pp. 1, 2021.

[3] Shao Linhai,&Qu Tiehua. The future development of normal education under the background of "deep integration" of information technology and education. Heilongjiang Higher Education Research, vol. 2015, no. 5, pp. 4, 2015.

[4] Feng Lijuan. Category system and path exploration of deep integration of higher education and information technology. China Adult Education, vol. 2018, no. 5, pp. 3, 2018.

[5] Lin Huiqing. Promote the deep integration of information technology and education and teaching to achieve high-quality connotative development of higher education. china university teaching, vol. 2018, no. 1, pp. 4, 2018.

[6] xu feng. Research on the systematic guarantee strategy for the deep integration of information technology and higher vocational education and teaching. Adult Education, vol. 37, no. 11, pp. 4, 2017.

[7] Yang Hao, Zheng Xudong,&Zhu Sha. Some thoughts on the integration of information technology and school education from the perspective of technology diffusion. China Audio-visual Education, vol. 2015, no. 04, pp. 7, 2015.

[8] Zhang Ce, Gu Songlin, Xu Xiaofei, Chu Dianhui, Ji Zhenzhou,&Lu Weigong, etc. Exploration of MOOC Teaching Pilot College-Taking Computer College of Harbin Institute of Technology(Weihai) as an example. china university teaching, vol. 2018, no. 11, pp. 5, 2018.

[9] Wei Chunjuan. Deep integration of information technology and higher ideological and political education in the era of big data. China Audio-visual Education, vol. 2022, no. 2, pp. 1, 2022.

[10] Bao Liying. Practical Exploration of Deep Integration of Information Technology and Ideological and Political Education in Colleges and Universities. China Higher Education, vol. 2021, no. 23, pp. 3, 2021.