Reflections on the Educational Administration of Engineering Universities in the Internet Era

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Abstract: The arrival of the digital Internet era not only accelerates the revolution of science and technology and economy, but also promotes the revolution of thinking at all times. The development of digitalization has subverted the traditional university education, such as educational philosophy, university management, teaching paradigm and so on. Based on the experience of educational administration management in engineering universities, the challenges faced by the teaching of engineering universities in the Internet era were discussed, and it was explored that the basis and key to the success of university educational reform is the integration and innovation of university educational administration management system and information technology means. Using digital network information resources platform can accelerate the integration of education and teaching management, thus creating a teaching and management model suitable for engineering universities.

1. Introduction

The development of information technology is forming the biggest social change and cultural revolution in human history, which combines cultural integration, economic competition and conflict of interests, making our society and culture face new contradictions and challenges [1]. In order to cope with the turbulent information revolution, the Ministry of Education has launched a series of reform measures in universities: (1) promote the development of educational ecology, develop online open courses and digitalize teaching resources. (2) With the help of the network of resources and information, construct information superhighway to improve the directness of information dissemination and application. (3) Promote the popularization of educational resources, promote educational equity, and provide more educational rights and opportunities. In addition, the innovative platform and brand building have also been vigorously promoted. The university educational administration system, as the main department to formulate teaching objectives, organize and manage teaching activities, guarantee teaching quality, and formulate reform measures in colleges and universities, bears the responsibility of realizing the national educational objectives directly. Therefore, the development of the times also promotes the governance revolution of the educational administration system [2]. Under the background of the great development of digital Internet, how to improve the teaching effect, change the state of education, innovate the concept of education, optimize the mode of education, and develop the teaching ability of teachers are important issues for the educational administration system of engineering universities [3].

2. Challenges Posed by the "Internet +" environment for Universities

With the deepening of the impact of the Internet on education, according to the current situation of education in engineering universities, through a comprehensive understanding of students' general learning situation in recent years, the main problems facing universities are as follows:

2.1. Object of Education

Generally speaking, most of the students are born after 2000, and digital devices such as computers and mobile phones have a great impact on life and learning, for instance, students have a wide range of knowledge and strong acceptance ability, but their knowledge is fragmented and not systematic enough. Students' attention in class is not focused, and they depend heavily on mobile

phones and computers, so they can't stop playing mobile phones in class [4]. From the psychological point of view, due to the growth of age and the weakening of pressure to enter school, the students' sense of awe and dependence on teachers is reduced, and the motivation of learning passion is significantly reduced compared with junior high school and senior high school [5]. Figure 1 shows the situation of college students in class.

Fig.1. The situation of college students in class

2.2. Discipline Construction

The training mode of students in engineering-based schools is different from that in comprehensive universities [6]. Civil engineering, water conservancy engineering, transportation engineering, material science and engineering are the dominant directions of engineering universities, which are developing rapidly and new technological achievements of which emerge in endlessly. Thus in order to adapt to the development of technology, the syllabus is adjusted frequently, usually once every four years [7]. This kind of adjustment brings difficulties to teachers' teaching. How to make teachers adapt and adjust the teaching content quickly is a challenge for the teaching office. With the rapid development and continuous penetration of Internet technology, especially the formation of "Internet +" environment, it has become an inexorable trend to integrate the development of teaching and the Internet in universities [8]. This requires college teachers to emancipate their minds, abandon the old and solidified traditional education model, actively understand and accept new things, adjust teaching content and use information technology to carry out teaching in accordance with the actual situation of school teaching in the era of Internet information [9].

2.3. Ideological Education

The uncontrollability of network information makes ideological educators face challenges. The Internet not only changes the way audiences get information, but also changes the way information is transmitted and distributed, and more emphasizes the participation and interaction between people. College students are more likely to learn from each other among their peers. They are no longer easily indoctrinated by ideological and political workers, but attempt to challenge the authority of educators, thus greatly reducing the effectiveness of Ideological and political work. At the same time, the mass of information, the openness and uncontrollability of network communication make ideological and political education more complicated, and also challenge the ideological and political workers' own ideas, knowledge, working methods and authority.

2.4. Cultivation of Comprehensive Quality

The aim of higher education is to promote the balanced development of students knowledge ability and comprehensive quality. As an engineering-oriented university, students' training has its own characteristics. Comparatively speaking, engineering students have good obedience, flexible thinking, strong practical ability and strong ability to use computers. However, due to the limitations of

long-term training methods, engineering universities are weak in training students' social communication ability, language expression ability and organizational ability, while the work students do after graduation also requires that they have certain team cooperation ability and leadership ability, communication ability, sense of responsibility and the ability to solve conflict problems. The development of the Internet has strengthened the communication between people. Even with the increasing frequency of communication and interaction, it is a great challenge to improve the organizational coordination, expressive ability and humanistic ethics of Engineering students.

3. Problems and Reflections on University Education in the Internet Era

At present, there are some common problems and reflections in the teaching of colleges and universities. At the student level: the characteristics of students' lack of learning enthusiasm, low self-consciousness, poor self-control and inappropriate learning methods determine that their ability of speculation and application needs to be improved. Under the Internet environment, many teaching work should be realized by means of network. The communication between teachers and students is based on virtual digital information, which weakens the teacher's educational function and can't teach students by words and deeds, while students' thinking is more active and their self-discipline is relatively poor. However, with the excessive use of auxiliary equipment, on the one hand, students can't get the correct outlook on life and values guidance, on the other hand, they are easy to be poisoned by the negative energy information of the network.

At the level of teaching: nowadays, teaching concepts are obsolete, knowledge structure is out of touch with the actual needs of social development, teaching skills and methods are lagging behind, teachers' career development is weak, and work and physical and mental health are under great pressure. Traditional classroom face-to-face teaching has always been a very important means of teaching in colleges and universities, which is not only convenient for teachers to manage students, but also help for teacher-student interaction. However, this form tends to inculcate theory too much and is severely decoupled from practice. "Internet +" can change this situation, and promote the transformation of teaching mode from unity to pluralism, such as mocking, simulation experiment software, evaluation and application. Students can learn through smart phones, from closed teaching to open teaching, thus increasing students' practical opportunities.

At the level of university management: at present, the management concept and execution ability of colleges and universities need to be improved, the proportion of teachers and students is out of balance, the construction of teaching resources, supporting facilities and mechanism innovation lags behind, the function of guidance and incentive is declining, and the construction of humanistic environment is neglected. Therefore, with the help of the development trend of the Internet, colleges and universities should actively change their own management concepts, strengthen service awareness, improve service ability, change rigid management mode, streamline organization and staffing, simplify work flow and improve work efficiency. In addition, colleges and universities should also use the Internet to realize the supervision mechanism of teachers and students on management work, widely adopt suggestions and opinions, and adhere to reform and innovation. At the same time, the management system of colleges and universities should be constantly improved to meet the requirements of the reform of colleges and universities under the Internet environment.

4. Discussion on Countermeasures

According to the requirements of the Ministry of Education, engineering colleges and universities need to improve students' cognitive ability, including three aspects: cognitive process and strategy, subject knowledge, and creativity which can embody critical thinking, information, quality, reasoning, speculation and innovation. At the same time, with the development of Internet technology, it is required to promote the reform of teaching ideas and governance methods and break the disciplinary boundaries, and thus the deep integration of information technology and teaching management should be accelerated. At present, foreign universities are also exploring the university

teaching mode in the Internet information age, and put forward UGC, MOOCS, SPOCS, Mini-LECTURES, PBL and other teaching modes, hoping to cultivate students' self-management and evaluation, academic openness, students' ethics, due diligence, factual self-evaluation and flexibility, initiative, diversity and inclusiveness, and metacognitive ability. Xu Fei (schoolmaster of Southwest Jiaotong University) put forward university reengineering in the digital era, that is, the change of University concept, governance and teacher demonstration caused by the digital revolution.

4.1. Reflections on the Reform of the Administrative System

In view of the new characteristics of teaching management in the network information age, a series of governance measures for the educational administration system of Engineering universities have been put forward, including macro-governance: action, management, evaluation; micro-governance: teaching, learning, management, which is an important guarantee for the teaching quality of schools. (1) First of all, the educational administration system should set goals and establish the coexistence of pluralism and joint efforts under the goals. (2) At the same time, the analysis and decision-making of big data (using multiple evaluations) should be strengthened. (3) Teaching management platform based on digitalization should be built. (4) The dean's office carries out an analysis of the age, teaching age, educational background and specialty of the teachers, and evaluates the whole subject, classroom teaching, examination papers, management cost and performance. (5) Teachers are encouraged to change their teaching methods and explore cognitive models through "Mobile Internet, Cloud Computing, Big Data" for autonomous, personalized, informationized and experiential teaching. For example, in order to solve the phenomenon of students playing with mobile phones in class, the school educational administration department tried to shield mobile phone signals by adding equipment, but found that the effect is not satisfactory in the actual operation process. Now the school tries to make the mobile phone become a tool of teaching application by developing hardware and software, and combining students' mobile phone with classroom projection system organically, hoping solve the problem of students' lack of concentration in classroom questioning. In this way, teachers are like highways, while mobile phones are like vehicles, which are carriers of students. The use of these vehicles and the formulation of relevant rules need to be realized and confirmed by the academic affairs department, which is like the traffic police on the highway. With the help of Internet + education, the transformation of teaching concepts and ways of governance can be promoted.

4.2. Improvement Measures

Promote the change of teaching mode: Using inquiry, task-oriented, problem-oriented, research-oriented, diversified and individualized teaching models and methods (Mu class, flip class, hybrid, order-based learning), students can communicate with teachers and even teachers throughout the country, so as to obtain knowledge from a large amount of information and gain growth wisdom from knowledge. (2) Promote the change of management mode: the deconstruction of knowledge hegemony and the reconstruction of teachers' roles can not be solved by relying solely on teachers. For example, cross-school course selection in colleges and universities can indeed optimize educational resources, but it also brings a series of challenges to teachers and school teaching management, which requires consultation between different school administrations to achieve multi-school teaching evaluation cooperation. (3) Change the evaluation method: The system work faced by the educational administration office nowadays includes data portfolio management, network platform and large data management platform, imitation of the tracking evaluation method based on the Internet of Things principle, teaching evaluation mechanism, students' ability and quality, teachers' teaching design and innovation, performance-based evaluation (quantitative and qualitative), digital guarantee of teaching quality, the establishment of mechanism, new digital teacher evaluation system, construction of high-quality course teaching resources, evaluation of digital information video resources and teaching performance.

5. Conclusion

With the advent of the Internet plus era, students' learning habits and habits have undergone great

changes, and the teaching and management work in colleges and universities is facing great challenges. Therefore, colleges and universities need to reform their teaching and management modes, actively use Internet technology to meet students' needs and adapt to the development of the times. Only by speeding up the integration of education and teaching management in the Internet information age and creating a new education model can we achieve the goal of training world-class talents put forward by the state.

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