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Integration of Student Management Systems with Education and Teaching: Strategies and Practices

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Abstract. In order to realize the innovation of the teaching mode of information management and information system profession, and better cultivate high-quality, application-oriented talents, the integration of student management system and education teaching in the background of multidisciplinary integration: strategy and practice. The article researches the teaching reform and practice of information management and information system specialty under the background of multidisciplinary integration. It analyzes the objectives and characteristics of information management and information system professional talents training, and puts forward the relevant measures of information management and information system professional teaching reform on this basis. The results show that after a period of teaching, most of the students in the class have good feedback on this teaching method. Conclusion: Practical teaching proves that the proposed teaching reform measures are feasible and have certain application value.

Keywords. Multidisciplinary Integration, Cultivation Objectives, Pedagogical Reform and Practice, Information Management and Information Systems Program

1. Introduction

With the rapid development of science and technology and the advent of the information age, a variety of new technologies and new means are emerging. These changes are affecting people's daily life and the concept of knowledge, knowledge is no longer a static objective reality, but a constant generation and change of existence, requiring individuals with an open mind, constantly reconstructing their knowledge system [1]. The development of the times in the transformation of individuals at the same time also affects the international competition, the demand for talent in various countries is also gradually changing, pay more attention to the ability to explore, the ability to practice the innovative talents [2]. For higher education, cultivating innovative and application-oriented talents and emphasizing the cultivation of comprehensive quality of college students have become the basic concept of contemporary university education. As an important position for talent cultivation, it is self-evident that the classroom in colleges and universities is a very important task. Classroom teaching in colleges and universities must keep pace with the development of the times, and always have a sense of crisis and awareness of the future, constantly injecting fresh blood and renewing the vitality of life

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[3]. Although the classroom teaching has been reformed, the traditional teacher-centered classroom teaching still accounts for a large proportion of the classroom teaching in colleges and universities, focusing on theory but not practice, single teaching organization and method, lack of interaction between teachers and students in the classroom, low performance of classroom teaching and so on, which is inconsistent with the new requirements of the classroom teaching in colleges and universities, and therefore, it is imperative that the classroom teaching in colleges and universities should be reformed and transformed.

"Endeavouring to provide every child with a fair and quality education" is the common vision of the whole world, and the characteristics of the times have made a distinctive mark on education. Primitive individual education is a characteristic of the agricultural era, classroom instruction and large-scale education is a characteristic of the industrial era, and in the third industrial revolution, flexible, diverse, open and lifelong personalized education has gradually become popular [4]. So what are the characteristics of education and learners in the era of Industry 4.0, which has become the focus of attention of countries around the world.

2. Literature Review

Based on the CR model idea of data envelopment analysis theory, others proposed a performance evaluation model of education informatization based on data envelopment analysis [5]. On the basis of summing up the main influencing factors of educational informatization, others put forward the IEPO evaluation model of school informatization application, and pointed out the focus of school informatization application system investment factors, guarantee factors, application process and application results evaluation [6]. Based on the grey system theory, others established a grey evaluation model combining qualitative and quantitative analysis, and conducted an empirical evaluation with the current situation of education informatization in colleges and universities in Henan Province as an example [7]. They adopted the method of determining the evaluation index weights of students, teachers and parents at different levels by experts' discussion, and then applied the combination matrix analysis method to calculate and compare the education informatization level [8]. Based on the analytic hierarchy process (AHP) and grey relational analysis (GRA), etc., they determined the weight of the measurement index of the informatization development level of colleges and universities, and calculated and evaluated the informatization development level of colleges and universities [9]. They used multiple regression analysis to assess the informatization application ability of Vietnamese primary and secondary school teachers, and explored its key influencing factors [10]. They used principal component analysis to assess the informatization level of Korean primary school teachers and students [11]. They used exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to assess the informatization level of 62 primary schools in Belgium [12]. They used structural equation model to comprehensively evaluate the informatization construction level of colleges and universities in China [13].

In this paper, the teaching reform and practice of information management and information system under the background of multidisciplinary integration is studied in detail, and teaching reform measures are proposed.

3. The methodology of the study

3.1. Talent Cultivation Objectives of Information Management and Information System Majors

At this stage, in order to cultivate comprehensive and high-quality talents of information management, all major universities have set up professional courses of information management and information system. This specialty belongs to management science, which is the second type of discipline in the field of management science, and its teaching reform and practice have gone through three stages, as shown in Table 1.

Table 1. Three major stages of professional development in information management and information systems.

Year	Stage
1978-1992	Scientific and technical information phase
1992-1998	Scientific and technological information phase
1998~present	The quality education stage

Students in this major learn about economics, information resource management, computers and information systems, and receive systematic training in order to become high-level specialists who can engage in information management and information system analysis, design, implementation management and evaluation in national management departments at all levels, enterprises, financial institutions and other departments. A comprehensive analysis of the above reveals that this major is a broad-mouth specialty that applies to various fields and industries in society, and is a core specialty that contributes to the development and construction of industries in the context of a modernized society. Moreover, the above training objectives are not only for the development of education and teaching in colleges and universities to point out the direction, but also to clarify the specific content of the training of students' ability and professionalism [14]. In this paper, on the basis of clarifying the training objectives of information management and information systems, we continue to analyze the teaching characteristics of this specialty.

3.2. Characteristics of the Information Management and Information Systems Program

Analyzing from the perspective of professional personnel training, it can be found that the specialty is characterized by multidisciplinary integration. In the process of teaching, students need to learn knowledge in many fields, including economics, computer science, management, communication and so on. Moreover, with the accelerated socialization and transformation of the research results of various disciplines, the interaction between information management and information systems and other professions is also getting stronger and stronger, so it is necessary to set up a good interaction channel between the discipline and various disciplines and professions in order to better satisfy the needs of the teaching of the discipline. In addition, the discipline is a relatively new discipline, is in the rapid development of information and data technology in the background, the development of information technology to a certain extent to promote the in-depth development of the discipline, at the same time, in order to effectively enhance the effectiveness of the educational work of the discipline, but also need to use the Internet technology to reform the professional teaching means and teaching methods, so as to ensure that the professional teaching work to achieve the desired effect of teaching.

3.3. Teaching Reform Strategies for the Information Management and Information Systems Program

The background of multidisciplinary integration puts forward new challenges to the teaching of information management and information system; in order to realize the improvement of the teaching effect of information management and information system, this paper puts forward the following teaching reform strategies.

3.3.1. Clarify the Curriculum System Based on the Needs of Society

In order to meet the social demand for information management and information system professionals, it is necessary to innovate the specialized curriculum system with the background of multidisciplinary integration. In this process, the main courses of the specialty are divided into two categories, i.e. basic knowledge courses and practical skills courses. When designing the teaching system, it is necessary to adjust the course content and update the content in time according to the development needs of the industry in the context of the new normal society, and in the process of updating, it should be noted that the basic courses need to be matched with the practical courses [15]. In addition, according to the social demand for additional courses related to artificial intelligence and big data. It should be noted that in the teaching process, it is necessary to intersperse the teaching of different disciplines or different fields of knowledge, so that the knowledge of multiple fields is integrated into the professional courses in a fragmented way, so as to broaden the knowledge of students. The designed curriculum system is shown in Table 2.

Table 2. Planning and Deployment of the Curriculum System for the Credit Management Program.

Fundamentals course	practical skills courses
Database system design and data analysis	Create database; Proficiency in SQL language; Proficiency in database configuration, etc
Data structures	Designing linear tables, logic trees, etc., and applying algorithms to examine data structures
Computer Programming Languages	Application of string and circular array, processing of exception array and data set, application of multithreaded data, java language programming, etc
Computer networks and their applications	Mastering how to set up a LAN, how to configure routers, switches, etc., and how to configure servers under different parameters
Integrated Experiments in Information Management and Information Systems	Serial communication experiments; Internet of Things experiments; general class experiments, etc
WEB Engineering and Its Application	Designing front-end and back-end of web pages and systems; developing web engineering environments, etc.,

3.3.2. Using Internet Technology to Reform Professional Teaching Tools and Teaching Methods

Information management and information systems majors belong to the more comprehensive disciplines, involving a lot of content teaching, so the Internet technology can be based on the traditional offline teaching transferred to the line, the use of fragmented time to carry out the course teaching work. Before teaching, teachers can upload the teaching key points of the current class to the platform, and guide students to carry out pre-course key knowledge pre-study. At the same time, teachers can arrange the teaching time according to the teaching hours. In the teaching, students can interact with teachers through pop-ups, messages, etc. In the class, the teaching video is

automatically recorded and uploaded to the background, and students can choose to watch it twice according to their personal needs after completing the learning in the class [16]. Through this way, to change the traditional teaching concepts of teachers, so that the teaching work to get rid of time, space and other factors of restriction, to achieve the comprehensive innovation of teaching methods and teaching methods.

In addition, the new era of education and teaching work should break through the restrictions and constraints of traditional teaching concepts, the "people-oriented" concept throughout the teaching, strengthen the students' subjectivity in learning, the use of relevant technology and video resources to display the knowledge points, to attract the interest of students at the same time to broaden students' knowledge, and on this basis to guide the students to independently develop a variety of experiments. On this basis, students are guided to carry out various experiments independently. At the same time, we need to emphasize the openness and innovation of the teaching process to ensure the quality of teaching. Teachers should go out, participate in various forms of advanced technology training, keep up with the trend of the times and accumulate more technical experience. Teachers should also carry out various forms of teaching seminars and scientific research cooperation among themselves, analyze the teaching deficiencies by using intelligent technology, and apply appropriate methods of teaching, including scenario teaching, problem seminars and interactive teaching, etc., so as to truly improve the teaching effect.

3.3.3. Designing a Diversified and Multi-Level Professional Training System

Professional training should be a multi-dimensional work, only to meet the needs of different types of talents, in order to ensure the implementation of professional teaching effect. For this reason, the teaching team has designed a framework of professional personnel training system based on diversification and multi-level, as shown in Figure 1.

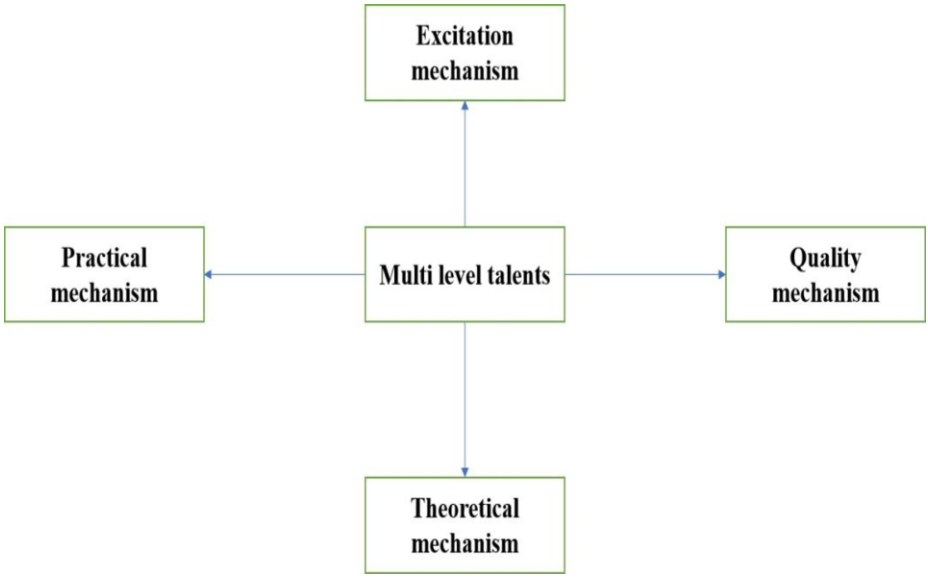

Figure 1. Professional training system based on diversification and multilevel.

As can be seen from Figure 1, in order to realize the cultivation of multi-level talents, the teaching needs to build incentive mechanism, quality mechanism, theoretical mechanism and practical mechanism, in this process, we also need to adopt a hierarchical talent cultivation mode according to the individual advantages and characteristics of students in the learning process, for the students with strong practical ability, the teacher can focus on the skills training and operation of the machine as the focus of teaching; for students who have a solid grasp of theoretical knowledge, the teacher can fill the knowledge system as the focus of teaching; for students with strong innovative ability, the teacher can focus on the development of divergent thinking as the focus of teaching. For students with solid theoretical knowledge, teachers can fill in the knowledge system as the focus of teaching; for students with strong innovative ability, teachers can cultivate divergent thinking as the focus of teaching. In addition, undergraduates, master's degree students and young teachers should be set up as the structure of the three-tier research system, so that students in the second year of the university can choose different laboratories according to their personal strengths and interests, and participate in the project research work of master's degree students and young teachers in their spare time, so as to cultivate their innovative concepts and thinking, and to improve the team's communication and cooperation ability [17]. In this way, we explore the multi-dimensional and hierarchical teaching system, so as to realize the targeted training of multi-level and diversified professionals.

4. Analysis of Results

Taking a pilot university in a certain region as an example, a pilot teaching was carried out for the major of information management and information system. Before teaching, a team of professional teachers was formed to conduct research on the teaching of professional courses. On the basis of clear teaching direction and talent cultivation objectives, the teaching program of the major "Information Technology Fundamentals" course, for example, is optimized according to the teaching reform strategy proposed in this paper. In teaching, the teacher according to the content of the course, set up for this course of three hours of teaching content, the first hour by the teacher of the students for professional theory teaching, in the teaching of the interspersed with part of the operation of information technology practice and application of examples, to achieve the initial understanding of the knowledge of the course [18]. The second semester arranged for students to operate on the computer, the practice can be provided by the teacher for the students to provide real cases to guide students to learn. Encourage students to participate in big data and mathematical modeling competitions and college students' innovation and entrepreneurship projects, invite experts from health administrative departments and medical institutions at all levels to interact with students, combining theoretical learning with practical problems to enhance students' abilities in various aspects. Through this stage of teaching, teachers can initially grasp the students' deficiencies in practical learning, and use this as a basis for adjusting the teaching program of the third semester. If most of the students are more receptive to the knowledge, the teacher can arrange the students to complete the information processing engineering project independently or in small groups in the third semester. If most of the students in the class do not understand the knowledge thoroughly, the teacher can arrange the third hour as a question-and-answer session according to the actual situation. In this way, we can realize the innovation and optimization of traditional professional teaching. According to the above

way to carry out the stage of teaching reform work, after a period of time of teaching, most of the students in the class of this teaching method of feedback is good.

5. Conclusion

Compared with other majors, the Information Management and Information System major is more cross-cutting, but its essence is still a new, complex major, mainly formed by the integration of information economics, management, science and technology information science and other specialties. In teaching, this major not only involves the professional knowledge of information management, but also covers the knowledge of social behavior and psychology. In order to deepen the teaching reform of this specialty, this paper proposes a three-pronged reform strategy, and takes a university as an example to carry out a pilot teaching practice, which proves the feasibility of the proposed teaching reform measures in practical application. However, in order to further promote the proposed measures in related fields, it is necessary to continuously improve and optimize the measures to enhance the teaching effect of information management and information system professional courses.

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