Exploration on Online Resources Construction of Health Information Management System Curriculum Under the Background of Integration of Production and Education

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Abstract. **Purposes** In recent years, the medical information industry has developed rapidly, and health information technology talents are scarce. Health information management system course is set up as the core course of health information management specialty, aiming to cultivate students' core skills of health information technology and solve the shortage of talents in medical information industry. **Methods** This course adopts the method of integration of industry and education, and co-construction of schools and enterprises, introducing in-depth cooperation between enterprises, and co-construction of curriculum resource base between schools and enterprises. Build an online teaching platform, schools and enterprises explore online and offline hybrid teaching methods, and innovate the course evaluation system. **Results** After years of construction and use, the construction of the course has improved the teaching quality, and has a good effect on training high-skilled talents for the health information technology industry.

Keywords: Health information technology · Talent cultivation · Curriculum construction · Course evaluation · Integration of production and education

1 Introduction

In recent years, with the continuous promotion of medical reform, the health information industry has ushered in rapid development. Since the COVID-19 broke out at the end of 2019 [1], health information technology has played a pivotal role in epidemic prevention and control [2]. At present, China lacks health information technology talents. High skilled talents in health information technology need to learn both basic medical courses and computer related courses. The span of medical science and computer science is large, and students are blind and lack of motivation to learn. It is easy for students to lose their way in the study of the two disciplines and find no correct learning methods. Due to the students' poor understanding of the major and unclear learning objectives of the major, it is easy to lead to insufficient understanding of the overall curriculum. It is easy for students to attach importance to computer specialized courses and despise basic medical courses. In addition, students are prone to have a strong dependence on learning. Teachers can learn what they teach, which cannot make learning in-depth.

In recent years, the state has been supporting the integration of industry and education and school-enterprise cooperation in policy, encouraging and supporting all sectors of society, especially enterprises, to actively support vocational education [3]. The course team has also been exploring the integration of industry and education, school-enterprise cooperation, joint enterprises to participate in the course construction, invite enterprises to participate in the course teaching, and jointly develop the course teaching objectives and content. Based on the integration of industry and education, school-enterprise cooperation also has great benefits in curriculum construction.

The course of health information management system is the core course of health information management specialty. This course aims to cultivate students to master the basic theoretical knowledge of health information management, the main methods and application technologies of system planning and design, system development and implementation, maintenance and operation. This course requires students to master the commonly used development principles and basic functional modules of health information management system, skillfully operate major domestic health information management systems, and be familiar with the management knowledge of health information management system, development design, main technologies and methods of health system management, public health supervision, health decision-making, system information management, health information management and other comprehensive knowledge. After learning, the students have high management ability and operation ability of health information system. At the same time, the teaching goal is to cultivate students with good technical application ability of health information system and high professional quality of health information management.

2   Strengthen the Integration of Industry and Education, and Jointly Construct the Curriculum by Schools and Enterprises

The course team conducted in-depth research in health care information enterprises, hospital information departments and other units. We had an in-depth conversation with engineers to sort out the skills required for medical informatization posts in enterprises and medical institutions. At present, the degree of medical information in medical institutions is getting higher and higher, and medical technology is becoming more and more important in improving patients' experience, reducing patients' waiting time and assisting diagnosis.

In terms of content, the course of health information management system should include the basic concepts of health information management system, some technical standards of health information management system, common and typical health information systems [4], etc. At the same time, students will be taught how to plan, test, implement, maintain and other basic theories and methods of health information management system, as well as common public health information systems [5–7].

The knowledge and skills of health information management lay a solid foundation for the cultivation of professional ability of students majoring in health information management. At the same time, we should establish morality, cultivate students' ideology and politics, cultivate students' awareness of the importance of health information management to health management, improve the professional quality of managing and using

Table 1. Course content and class hour distribution table

ID	content of courses	class period
1	Introduction to Health Information Management System	4
2	Health Information Management System Standard	6
3	Hospital information system	8
4	Doctor and nurse information system	8
5	Typical clinical information system	8
6	Health Information Management System Integration Technology	4
7	New Technology of Health Information Management System	6
8	Planning and Analysis of Health Information Management System	4
9	Design and development of health information management system	4
10	Health Information Management System Testing and Security	4
11	Implementation, operation and maintenance of health information management system	4
12	Public Health Information System	4

health information, promote health information management, and improve the social and economic benefits of health.

The course of health information management system has the characteristics of wide coverage, large amount of knowledge, scattered knowledge points, etc. How to improve students' learning initiative and learning quality makes us always explore the direction of reform. Combined with the characteristics of the curriculum and the direction of vocational education reform, contact with the current mainstream medical information enterprises, investigate the post skills required by students in the enterprise, and correspond to the health information management system curriculum, carry out the reconstruction of the curriculum content, and form the curriculum content and class hour distribution in Table 1. The course team collects real cases of enterprises, uploads them to the online course website, integrates them into the course, and enables students to learn real enterprise projects in the course, so as to prepare for subsequent employment. Integrate "curriculum ideological and political", "innovation and entrepreneurship" and other contents into the curriculum.

3   Build an Online Course Resource Database and Explore a Hybrid Teaching Method Combining Online and Offline

With the steady development of network and science and technology, China's education and teaching methods have also undergone tremendous changes. A series of education and teaching reforms have been actively promoted, and the construction of high-quality online development courses is one of the important directions. The construction of high-quality online development courses not only realizes the integration and sharing

of effective resources of educational resources, but also helps students to make use of these high-quality resources to conduct online learning in their spare time and fully take advantage of fragmented time.

The course website is deployed to the Superstar Learning Communication platform. The platform realizes the functions of teacher building, opening and data pushing before class. In the class, the teacher's courseware distribution, sign-in, interaction, data analysis and other functions. After class, teachers can arrange homework online, students can review and complete homework and other functions on the platform, and can also learn extended materials. At the same time, the platform can conduct online course assessment, including the functions of item bank import, test paper generation, automatic test paper scoring, score analysis and export. The overall function of the course website is shown in Fig. 1.

With the popularization and application of mobile smart phones, more and more modern teaching methods are directly applied to the teaching process. Mixed teaching is the integration of classroom teaching and network teaching. It comprehensively uses different technical means and different learning methods to achieve the organic integration of online and offline. It is a teaching mode of offline and online communication and integration between teachers and students. Mixed teaching can not only give full play to the leading role of teachers, but also highlight the dominant position of students in the learning process. It not only retains the advantages of traditional teaching, but also gives play to the leading advantages of teachers. The two are combined and complementary.
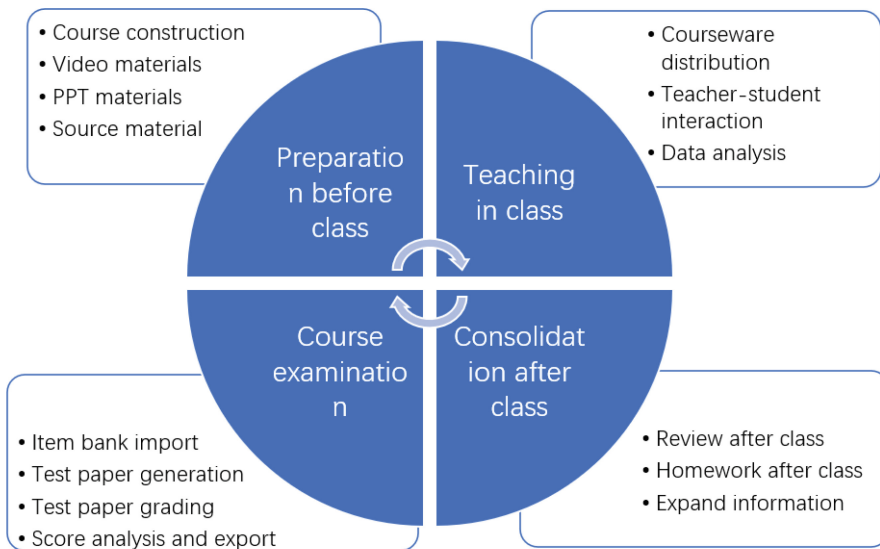
Fig. 1. Functions of online course website

3.1 In Terms of Teaching Methods, Abandon Indoctrination and Implement Heuristic Learning

First, stimulate students' interest and motivation through multiple channels when making teaching plans; Secondly, formulate specific curriculum implementation plan, including the teaching of theoretical courses, the teaching of practical training courses and self-study after class. The teaching of theoretical courses mainly uses the heuristic, participatory, figurative and other teaching methods of "problem centered", and guides students to think actively, discuss freely, activate the classroom atmosphere, and achieve the interaction between teaching and learning; The practical training course mainly adopts the "project teaching method" to make the content and practice of students' learning at school seamlessly connect with the employment position; After class self-study, first propose project tasks, and guide students to complete tasks to enable students to master necessary knowledge and expand knowledge.

3.2 Reform and Innovate in Teaching Means

In terms of teaching means, we should make full use of modern teaching means such as multimedia classrooms and campus networks, constantly summarize teaching experience, boldly carry out teaching reform and innovation, rapidly improve the level of education and teaching theory and practice, and strive for new breakthroughs in teaching mode innovation. Flexible application of heuristic, project, discussion and other teaching methods to form a set of curriculum teaching mode that can visualize abstract content and popularize profound content.

3.3 Building Online Course Development Website

At present, the course website is built on the Superstar platform. The teachers of the course team classify the course content according to knowledge points, make relevant teaching videos in chapters, and upload them to the course website. At present, 113 videos have been recorded, with a total duration of more than 4200 min, and 36 documents have been shared. There are more than 400 students participating in this course, with more than 430000 clicks. In this way, teachers can be helped to clarify teaching objectives and key and difficult points, and students can also carry out targeted systematic learning.

4 Innovative Curriculum Assessment and Evaluation System

In the past, the assessment of courses was only conducted through examination papers, but the disadvantage of this approach was that it could not reflect the real learning situation of students. After discussion, our course team decided to adopt comprehensive evaluation methods such as student attendance, usual homework scores, ordinary performance, enterprise evaluation, online course evaluation, and examination scores. The course performance evaluation system is shown in Fig. 2.

The paper score is only a part of the final score, and the rest of the scores are comprehensively weighted according to the situation of students clicking online courses,

Fig. 2. Course performance evaluation system

the total class hours of online learning, the completion of homework after class, and online simulation operations, so as to comprehensively measure students' learning.

In addition to investigating the mastery of theoretical knowledge, it focuses on the cultivation of students' comprehensive professional ability and quality, making assessment and evaluation a part of the complete learning process. Gradually increase the strength of usual assessment and the reform of final examination methods. Many examination methods, such as closed book examination, open book examination, combination of open book examination and closed book examination, and practical operation examination, are constantly trying to investigate students' practical operation ability and problem-solving ability, with a view to urging students to learn the course in an all-round way.

Increase enterprise evaluation. Employers have the most say in the quality of talent training. Therefore, the company's skillful craftsmen are quoted to deeply participate in the course construction, and senior engineers are employed to participate in the course teaching, course goal setting, course content construction, etc. The company's real cases are used in the practical training courses. The enterprise teachers track the situation of the students' schools in the whole process, and the enterprise gives the enterprise evaluation according to the post skills learning situation.

5   Conclusions

The course team has constantly improved the construction of the course website, and constantly enriched and improved the teaching resource database. In the course of curriculum construction, we should strengthen the integration of industry and education, and school-enterprise cooperation. We should introduce the real project of enterprises

as a case, and build the school-enterprise cooperation, and finally build the curriculum website into a teaching platform service platform for students and teachers. Enrich the teaching resources of the network to facilitate students to use the website for independent learning. We put the syllabus, teaching plan, teaching courseware, teaching cases, multimedia resource library, exercise library, etc. online according to the plan, launch online and offline hybrid classes, and supervise and evaluate students' online learning.

Based on the construction of high-quality teaching resources and online application of open courses, the project aims to build a first-class teaching staff, first-class teaching content and first-class teaching level. It will innovate in the practical teaching mode, strive to fully integrate the teaching content with the actual work content, effectively enhance the students' ability to apply health information technology, and ultimately achieve the goal of comprehensively improving the teaching quality.

References

1. Pastor L, Vorsatz B. Mutual Fund Performance and Flows During the COVID-19 Crisis[J]. Social Science Electronic Publishing. 2020.
2. Liang B J. Research and practice of health information technology personnel training based on Modern Apprenticeship[C]// 2021 2nd International Conference on Artificial Intelligence and Education (ICAIE). 2021.
3. Ding W, Wang H. Exploration on the Talent Training Mode of the Industry Education Integration and School Enterprise Cooperation of Applied Undergraduate Majors[C]// 2021 2nd Information Communication Technologies Conference (ICTC). 2021.
4. Kioskli K, Fotis D T, Mouratidis H. The landscape of cybersecurity vulnerabilities and challenges in healthcare: Security standards and paradigm shift recommendations[C]// The 16th International Conference on Availability, Reliability and Security (ARES 2021). 2021.
5. Lu W, Ng R. Automated Analysis of Public Health Laboratory Test Results[J]. 2020.
6. Battineni G, Baldoni S, Chintalapudi N, et al. Factors affecting the quality and reliability of online health information[J]. Digital Health, 2020, 6(1):1–11.
7. Biancone P, Secinaro S, Brescia V. A Review of Big Data Quality and an Assessment Method and features of Data Quality for Public Health Information Systems. 2018.