

Research on Big Data Platform Deployment and Maintenance Course Practical Teaching based on "Job-Curriculum-Competition-Certification + Ideological and Political Integration"

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Abstract: With the rapid development of the big data industry, the demand for big data technical talents has increased sharply. The big data technology major in higher vocational colleges aims to cultivate high-quality skilled talents with capabilities in data collection, processing, operation and maintenance, and technical services. The major integrates the core skills of big data implementation and operation and maintenance positions into professional courses and conducts teaching practice based on the "Job-Curriculum-Competition-Certification + Ideological and Political Integration" model. By constructing an education system that integrates knowledge imparting, ability cultivation, and value shaping, ideological and political education is integrated into course teaching, achieving an organic combination of professional teaching and ideological and political education content. At the same time, a blended teaching mode is adopted, focusing on the comprehensive cultivation of students' knowledge, abilities, and qualities, using competitions to promote learning and training, and improving the quality of talent cultivation.

Keywords: Ideological and Political Education in Courses; Integration of Job-Curriculum-Competition-Certification; Maritime Characteristics; Big Data Technology; Blended Teaching.

1. Introduction

With the rapid development of the big data industry, the demand for big data technical talents has increased sharply. According to the "14th Five-Year Plan for the Development of the Big Data Industry" issued by the Ministry of Industry and Information Technology, it is predicted that there will be a shortage of 2.3 million core big data talents by 2025 [1-2]. The big data technology major in vocational colleges aims to cultivate high-quality skilled talents proficient in data collection, processing, operation and maintenance, and technical services. Teaching in this field needs to closely align with the societal and economic demand for compound talents, fully integrating the essential knowledge, skills, and qualities required for jobs into the curriculum system, ensuring that the cultivated talents not only have solid professional skills but also possess comprehensive qualities to be competent for various positions in the big data field and meet the urgent needs of industry development.

The integration of "Job-Curriculum-Competition-Certification" refers to "defining courses based on jobs, promoting courses through competitions, and integrating courses with certifications," primarily aiming at the professional ethics, competencies, and quality requirements of employment positions as the goal of talent cultivation [3]. The goal of ideological and political education in courses is to cultivate socialist builders and successors who are comprehensively developed in morality, intelligence, physical education, aesthetics, and labor [4]. The integration of "Job-Curriculum-Competition-Certification" focuses on talent cultivation, while the construction of ideological and political education in courses emphasizes personal development. According to the requirements of the national modern vocational education system, deeply integrating the two to promote the cultivation of high-quality technical and

skilled talents has become an important content of educational and teaching reforms in vocational colleges. Currently, some higher vocational colleges have attempted to combine ideological and political education in courses with the integration of "Job-Curriculum-Competition-Certification" in practice to carry out collaborative education, achieving certain results. However, there are still problems such as unclear logic in collaborative education, weak operability, and ineffective integration of value shaping with knowledge imparting and ability cultivation [5-6]. The construction of ideological and political education in courses and the integration of "Job-Curriculum-Competition-Certification" are still fragmented.

The main employment positions for students majoring in big data technology in higher vocational colleges include data collection and processing, big data implementation and operation and maintenance, big data analysis and visualization, and big data platform management. The position of big data implementation and operation and maintenance requires students to master a series of core professional technologies to ensure the effective deployment, stable operation, and continuous optimization of big data platforms. This position involves not only the setup and maintenance of hardware facilities but also the configuration, monitoring, troubleshooting, and performance tuning of software systems, among other aspects. The big data platform deployment and operation and maintenance course is a core course in our school's big data technology major, playing a crucial role in the evaluation standards for the quality of talent cultivation. The major integrates the core skills of big data implementation and operation and maintenance positions into this course and conducts teaching practice based on the "Job-Curriculum-Competition-Certification + Ideological and Political Integration" model. This paper discusses the implementation path of collaborative education through "Job-Curriculum Integration, Curriculum-Competition Integration,

Curriculum-Certification Integration, and Ideological and Political Integration," aiming to innovate the cultivation path of scarce compound technical and skilled talents, further promote the development of vocational education types, enhance the adaptability of vocational education to market demand, and improve the social influence of vocational education.

2. The Education System of "Job-Curriculum-Competition-Certification + Ideological and Political Integration"

Big data technology professional courses contain abundant ideological and political elements, and more importantly, it is essential to dig out the implicit ideological and political education elements embedded in professional courses. In teaching, these elements should be scientifically and effectively excavated and integrated into course teaching to achieve an organic combination of professional teaching and ideological and political education content and stimulate students' scientific and technological innovation awareness. The mining model is shown in Figure 1.

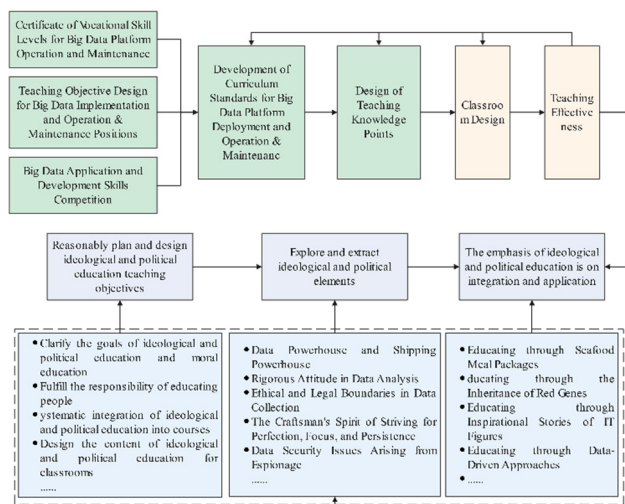


Fig 1. The mining model of ideological and political education in the course

The big data technology major emphasizes the need to construct an education system that integrates knowledge imparting, ability cultivation, and value shaping during the teaching process. Teachers should focus on condensing knowledge in value dissemination and emphasizing value guidance in knowledge dissemination, integrating ideological and political education into all aspects and links of course teaching and reform. According to the requirements of education, the big data technology major incorporates maritime characteristics, comprehensively clarifies the knowledge system it contains, clarifies the goals of ideological and political construction, and coordinates the focus of ideological and political teaching in each course and teaching link by revising and improving the professional training program, teaching syllabus, and teaching plan. The big data platform deployment and operation and maintenance course incorporates shipping big data projects, designs teaching activities with corresponding activity evaluation indicators, formulates an evaluation plan for ideological and political education, and finally forms a curriculum framework for ideological and political education integrated with skills

education, as shown in Figure 2.

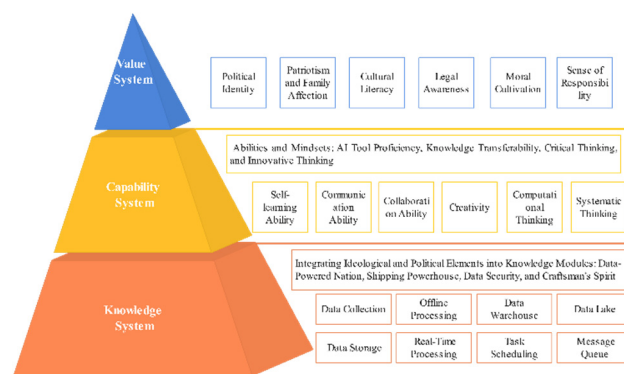


Fig 2. The curriculum framework for ideological and political education integrated with skills education

3. Teaching Practice of "Job-Curriculum-Competition-Certification + Ideological and Political Integration"

The integration of "Job-Curriculum-Competition-Certification" is a significant measure to deepen the supply-side structural reform of education. The job requirements for big data implementation and operation and maintenance positions reflect the core professional qualities that are necessary for the position. The curriculum is manifested in the course content structure corresponding to these professional core qualities. Competitions refer to vocational skills competitions, skills development and technological innovation competitions among BRICS countries, and other contests; certifications refer to Huawei big data-related certificates such as HCIA, HCIP, HCIE, and "1+X" certificates. Jobs are fundamental and dynamic, while curriculums, competitions, and certifications should revolve around professional core qualities, with jobs as the core, curriculums as the starting point, competitions as the means, and certifications as the supplement, to continuously improve and optimize, forming a curriculum reform mechanism where "curriculums follow jobs." In the deep cooperation between schools and enterprises and the collaborative education model, the big data platform deployment and operation and maintenance course team conducts in-depth research and analysis with industry experts from enterprises, clarifies the demand for compound talents and professional competency requirements for big data implementation and operation and maintenance positions, and jointly formulates the course's talent cultivation goals, enabling seamless integration between the course's talent cultivation and the actual job requirements of enterprises, so that students can master the knowledge and tasks involved in the actual job process during the course. The competitions corresponding to the big data technology major include vocational skill competitions and industry competitions. Changing the previous practice of selecting outstanding contestants to receive separate training and guidance before participating in competitions, which results in the failure to popularize the learning of new technologies, standards, and norms in the industry, we use competitions to promote learning and training. Taking new technologies, standards, and norms in the industry as the benchmark, the course content is dynamically updated and adjusted according to competition standards and content, eliminating outdated knowledge and technologies to avoid a

disconnection between learning and application. Taking the "Vocational Skill Level Certificate for Big Data Platform Operation and Maintenance" as an example, the skill assessment standards for big data platform operation and maintenance are integrated into the course assessment standards, and the certification question bank is integrated into the course question bank. Whether students can complete the tasks in the certification question bank is used to verify the teaching effectiveness of the course, so that through the course, students can truly master the knowledge and skills required for the vocational skill level certificate assessment, achieving curriculum-certification integration, improving the pass rate of certifications, and enhancing employment competitiveness.

In the practical teaching of the big data platform deployment and operation and maintenance course, the OBE (Outcome-Based Education) concept is integrated throughout the entire teaching process, centering on students and employing teaching methods such as problem-based learning, task-driven teaching, case studies, and group discussions to stimulate communication and cooperation among students, as well as to cultivate their multidimensional thinking and practical problem-solving abilities. Full consideration is given to the differences in learning goals and methods among various types of students, allowing for individualized and differentiated guidance. A blended teaching mode of "MOOC + SuperStar Teaching Platform + Classroom Instruction" is adopted, deeply integrating "online" and "offline" learning to effectively expand the course in terms of length, depth, and breadth. The OBE teaching model focuses on the comprehensive cultivation of students' knowledge, abilities, and qualities. Both teaching design and evaluation emphasize learning outcomes, implementing an output-oriented, student-centered, and continuously improved teaching reform ideology, which aligns well with the goal of cultivating "from 0 to 1" innovative consciousness and abilities. Firstly, based on the teaching framework, the teaching implementation process that integrates "from 0 to 1" innovative consciousness into the course is designed, including the implementation steps of ideological and political education in both theoretical and practical teaching. Then, a learning analysis is conducted on the teaching subjects to carry out teaching practices. The practical content is mainly divided into theoretical teaching practices, phased computer-related practices, and fully integrated computer-related practices, with corresponding computer-related practical cases cited to specifically illustrate the practice process. Finally, based on various competitions, students are trained in innovation, and the practical use of the ideological and political education case library is continuously enriched.

The classroom is the main channel for carrying out ideological and political education in courses. However, limiting ideological and political education to the classroom not only easily turns it into "classroom-only ideological and political education," making it formalistic, but also affects the teaching of course content and teaching effectiveness if excessive ideological and political education is conducted in the classroom. The course adopts a combination of in-class and out-of-class activities to systematically carry out ideological and political education in multiple dimensions. The ideological and political elements are condensed and briefly introduced in the classroom, while outside the classroom, activities such as video watching, homework completion, group discussions, and project design are

conducted through platforms like Learning Tong to systematically carry out ideological and political education in various ways. This ensures that ideological and political education is integrated throughout the entire course learning process, making it organized and systematic.

4. Conclusion

This paper studies the teaching practice of the big data platform deployment and operation and maintenance course based on the "Job-Curriculum-Competition-Certification + Ideological and Political Integration" model. By integrating core skills of big data implementation and operation and maintenance positions into professional courses and relying on the "Job-Curriculum-Competition-Certification + Ideological and Political Integration" model, the organic integration of professional teaching and ideological and political education content is achieved. At the same time, a blended teaching mode is adopted, emphasizing the comprehensive cultivation of students' knowledge, abilities, and qualities, effectively improving their employment competitiveness.

With the continuous development of big data technology and the continuous expansion of its application fields, the demand for big data technology talents will become more diversified and high-end. In the future, the professional field needs to further optimize and improve the "Job-Curriculum-Competition-Certification + Ideological and Political Integration" teaching model, deeply mine the ideological and political elements in professional courses, strengthen deep cooperation with enterprises, and jointly formulate talent training programs that better meet market demands. At the same time, it is also necessary to focus on cultivating students' practical and innovative abilities, laying a solid foundation for their career development.

Acknowledgments

This work was financially supported by the funding of the Philosophy and Social Science Research Project of the Jiangsu Higher Education Institutions of China (2022SJYB0804), the Computer Education Teaching Research Project of Association of Fundamental Computing Education in Chinese Universities (2023-AFCEC-306), and the Excellent Teaching Team for QingLan Project of the Jiangsu Higher Education Institutions of China (Big Data Technology Teaching Team with Shipping Characteristic).

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