

Exploration and Practice of the Path for Ideological and Political Construction in Professional Courses of Vocational Colleges

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Abstract:

Under the background of the “Double High Plan” construction project, this article takes the Urban Rail Transit Operation and Management program as an example. Starting from a “student-centered” professional course reform, through questionnaire surveys and enterprise interviews, it analyzes student needs and job competency requirements, proposing a dual-driven reform path for core professional courses integrating “curriculum-based ideological and political education + industry-education integration.” Practice shows that task-driven teaching infused with ideological elements such as craftsmanship spirit and teamwork, combined with a school-enterprise collaborative practical teaching model, can effectively enhance students’ professional qualities and comprehensive abilities, achieving the organic integration of knowledge delivery, skill cultivation, and value guidance.

Keywords:

Curriculum-based Ideological and Political Education, Industry-Education Integration; Professional Course Reform, Vocational Colleges

1. Introduction

With the successive release of policy documents such as the National Vocational Education Reform Implementation Plan (State Council [2019] No. 4) and the Guidelines for Ideological and Political Construction in Higher Education Courses (Ministry of Education [2020] No. 4), vocational education has been entrusted with the core mission of “serving industrial upgrading and cultivating high-quality technical talents” [1,2]. The policies explicitly require vocational colleges to deepen industry-education integration, promote the organic integration of professional courses with ideological and political education, and build a tripartite educational system of “knowledge delivery, skill cultivation, and value shaping.” In this context, curriculum-based ideological and political construction has become a critical path for vocational colleges to implement the fundamental task of “cultivating virtue and nurturing talent,” while industry-education integration provides practical grounding.

Current progress in ideological and political construction for professional courses in vocational colleges has yielded phased achievements. Research indicates that most vocational colleges emphasize the integration of ideological elements in professional course standards. For example, Yao Xuefeng et al. from Shanghai Urban Science and Technology College proposed a “three-dimensional” curriculum construction path: collaborative mining of ideological resource points, genetic integration of ideological elements into teaching lines, and multidimensional evaluation of ideological outcomes [3]. Su Renquan from Shaanxi Railway Engineering Polytechnic explored modular teaching of ideological and political education in higher vocational courses [4]. However, challenges remain: superficial enterprise participation in curriculum design, fragmented integration of ideological elements (e.g., reducing ideological education to “case insertion”), and imbalanced teacher capabilities (e.g., prioritizing skills over ethics and lacking industry experience).

The root cause lies in the absence of a closed-loop mechanism for “synergizing industry-education integration and curriculum-based ideological and political education.” Traditional curriculum design overly relies on colleges, weakening enterprises’ voice as demand-side stakeholders, resulting in ideological education divorced from real-world scenarios. Existing research focuses on single-course reforms rather than systematic exploration of long-term school-enterprise collaborative mechanisms. Only through industry-education integration can the “ivory tower” dilemma of curriculum-based ideological education be resolved, achieving the strategic goal of “cultivating talent for the Party and the nation.”

2. Demand Research for Curriculum-Based Ideological and Political Construction

To better understand student learning needs, this study reformed the core course Urban Rail Transit Electromechanical Equipment Maintenance for the Urban Rail Transit Electromechanical Technology program at Jilin Communications Polytechnic.

2.1. Student Demand Survey

In this paper, first of all, through the questionnaire star website design research questionnaires, the use of questionnaire research method, the research object for the Jilin Institute of Transportation Vocational and Technical College of Railway Transportation College of Urban Railway Transportation Electromechanical Technology professional students and graduated students, mapping the students on the curriculum transformation of the teaching method and the assessment of the form of the reception of the preferences and so on. The research process adopts anonymous form, this research collects a total of 139 questionnaires, 139 valid questionnaires. By analyzing the research data, it was found that more than 70% of the students preferred to complete the learning content in the form of independent learning and teacher assistance. In terms of teaching methods, the highest choice is to complete the learning content in the method of student group discussion, with the teacher playing an auxiliary role (53.24% of students chose); followed by the whole course is taught by the teacher (23.02% of students chose). In terms of assessment methods, students preferred to submit learning outcomes in each class (49.64% of students chose), followed by the original examination method (26.62% of students chose). 80.58% of students thought that the catechism class of “Mechanical and Electrical Equipment of Urban Rail Transit Stations and Stations” recorded by the university played a role in learning after class.

2.2. Enterprise demand research

Secondly, combining with the cooperative enterprises of Jilin Institute of Transportation Vocational and Technical College of Railway Transportation and the employment situation of students majoring in urban rail transportation electromechanical technology, this topic selects Guanghua Science and Technology Company Limited and Jilin Jinguang Electric Company Limited as the objects of the research, and conducts face-to-face talks with the interviewees in the form of interviews, to start from the aspect of enterprise demand, and to probe into the vocational competence and vocational qualities that the enterprise needs in terms of talent demand. We will provide reference for this course to transform the professional course of “Overhauling of Urban Railway Electromechanical Equipment” with vocational ability. How to train students to master professional knowledge and skills, and how to train students’ teamwork ability, communication ability, problem analysis and problem solving ability, and independent learning ability are the key contents of the research in the teaching process of professional courses.

3. The Path and Practical Effectiveness of the Construction of Professional Course Ideology and Politics

The transformation of professional courses in higher vocational colleges and universities needs to take the integration of industry and education as the key, focusing on the dual core of “students’ demand” and “job competence” of enterprises, and constructing “demand research - standardization - reconstruction - teaching innovation - multiple evaluation”. Reconstruction - teaching innovation - multiple evaluation” of the whole chain transformation path. Taking the “Overhaul of Urban Railway Electromechanical Equipment” course of Jilin Jiaotong Vocational and Technical College as an example, its transformation path can be summarized into three aspects: reconstructing the curriculum standard, innovating the teaching mode, and constructing a diversified evaluation system.

3.1. Collaboration between schools and enterprises to reconstruct the curriculum standard and deepen the mechanism of industry-teaching integration and educator training

Demand-oriented course objective design: through the questionnaire survey of 139 students and graduates, it is found that 73% of the students have the highest acceptance of the “task-driven + group cooperation” teaching mode; combined with the research on the job competence of the cooperative enterprises, such as Guanghua Technology, the “awareness of equipment operation standard” and “emergency handling” are extracted, which are the key elements of the curriculum. Combined with the job competence research of Guanghua Science and Technology and other cooperative enterprises, the three core vocational qualities of “awareness of equipment operation standardization”, “emergency handling ability” and “cross-job collaboration quality” were extracted and transformed into the objectives of the course ideology and politics (As shown in Table 1).

Dynamically adjusted curriculum standard system: establish a joint teaching and research office of the university and enterprises, and hold a curriculum revision meeting every semester. For example, in view of the trend of intelligent transformation of subway, the module of “intelligent operation and maintenance of AFC system” has been added, which is synchronized with the integration of

“technological innovation”, “localization substitution” and other ideological and political cases.

Table 1. Curriculum Objectives and Civic Mapping of “Overhauling Electromechanical Equipment of Urban Rail Transit”.

Vocational Competency Objectives	Corresponding Civic Element	Medium of instruction
Standardized operation of equipment	Craftsmanship, awareness of safety responsibilities	Reflections on Industry Accident Cases
Troubleshooting	Calm Response, Teamwork	Subway Emergency Failure Simulation Exercise
Practice in the application of new technologies	Innovation awareness, sense of mission to strengthen the country in science and technology	Comparison of R&D cases of domesticated equipment

3.2. Task-driven teaching innovation, stimulate students’ subjective participation

Task-driven teaching takes "students' needs" and "job competence" as the core, and builds a closed loop of immersive learning through the "three-step progressive" teaching mode (independent inquiry before class - collaborative practice in class - reflection and expansion after class). Through the "three-step progression" teaching mode (independent inquiry before class - collaborative practice in class - reflection and expansion after class), the closed loop of immersive learning is constructed. Taking the course of "Overhaul of Urban Railway Electromechanical Equipment" as an example, the specific implementation path is as follows:

3.2.1. Pre-course independent inquiry: catechism resources + task list drive

Relying on the Wisdom Tree platform, “independent study task list” containing industry cases is released, such as “analyzing the emergency handling process of a subway platform door failure”. The coverage rate of the catechism video of “Mechanical and Electrical Equipment of Urban Rail Transit Stations” recorded by the course team reaches 100%, and 80.58% of the students think that it significantly improves the efficiency of pre-study. The design of the task list incorporates elements of ideology and politics. For example, in the module of “Equipment Maintenance Process”, students are required to reflect on the sense of responsibility behind “standardized operation” by comparing the differences between domestic and international industry standards with the requirements of “engineering ethics”. The responsibility consciousness behind “standardized operation”.

3.2.2. Collaborative practice in the classroom: real projects + enterprise mentor intervention

The classroom teaching adopts the mode of “5-member team + enterprise mentor”, taking the real problems of enterprises as the task carrier. For example, in the module of “AFC System Operation and Maintenance”, Guanghai engineers participate in designing the practical training task of “Ticketing Data Abnormality Troubleshooting”, which guides the students to solve problems from the dimensions of technical operation (e.g., data cleaning) and professional ethics (e.g., passenger privacy protection). Drawing on the experience of the Problem Oriented Approach, we set up conflicting issues (e.g., “Do we prioritize efficiency or safety in equipment repair?”). Through role-playing and debating, students will be able to develop their dialectical thinking and teamwork skills.

3.2.3. Post-course reflection and expansion: virtual simulation + political deepening

Using the virtual simulation platform to simulate complex scenarios, students are required to submit a double report containing “technical solutions” and “humanistic reflections”. For example, in the task of “passenger flow diversion on the platform”, students need to analyze the gap between their own plan and the industry benchmark in the context of the case of “great national craftsmanship”, and write a “plan for improving excellence”. The students were required to analyze the gap between their own programs and the industry benchmarks and write “improvement plans for excellence”. The completion rate of the post-course development tasks reached 92%, of which 78% of the students took the initiative to reflect on the technical limitations by referring to the elements of the Civic and Political Science, which proved the organic integration of “knowledge-capability-value”.

3.3. Construction of a diversified evaluation system to realize the two-dimensional assessment of “competence + literacy”

Focusing on process evaluation, both competence and quality are emphasized. Focusing on the contribution of the team, quantitative scoring from the dimensions of communication efficiency, responsibility sharing, etc., and mutual evaluation of the group; by the technical backbone of the cooperative enterprises according to the post standards, such as troubleshooting timeliness, operation standardization, etc., the enterprise mentor practical scoring, 2024 data show that the students’ practical scores on average increased by 23%; quantitative assessment of responsibility awareness, innovative thinking and other non-technical indicators, for example, in the “equipment maintenance” task, the initiative to put forward safety hazards in the “equipment maintenance” task, and the students’ ability to improve their skills. For example, in the task of “equipment maintenance”, students who take the initiative to propose optimization solutions for safety hazards will be awarded “extra points for innovation”, thus realizing the scoring of ideological literacy.

Establishing a two-way feedback mechanism between schools and enterprises to dynamically optimize the curriculum design. A symposium on “Teachers-Enterprises-Students” is held once a semester, and in the meeting in 2024, the enterprises put forward the demand for adding the module of “Data Ethics”, and the course team developed the practical training program of “Data Security in Intelligent Stations” accordingly. Accordingly, the course team developed a practical training program on “Data Security in Smart Stations”, incorporating ideological and political objectives such as “responsibility for information confidentiality”; conducted a survey on the career development of graduates in the past three years, and the data showed that the job retention rate of the students who participated in the curriculum reform increased from 52% to 78%, and 86% of the employers thought that their students had a high level of “data ethics”. Employers believe that their professionalism is higher than the average level of the industry.

4. Conclusions

Civic and political construction of professional courses in vocational colleges and universities needs to take the integration of industry and education as the core hand, and realize the goal of “knowledge-competence-value” by reconstructing the curriculum standard, task-driven teaching innovation and reforming the multiple evaluation system through the collaboration of schools and enterprises. Taking the

course of “Overhaul of Electromechanical Equipment of Urban Railway” as an example, practice shows that task-driven teaching (such as enterprise real project rehearsal and virtual simulation training) which integrates the elements of ideology and politics such as “craftsmanship” and “serving the country with science and technology” can significantly improve the students’ vocational literacy and shorten their job adaptation cycle by 30%, and make them more capable to work. It can shorten the job adaptation cycle by 30% and increase the retention rate from 52% to 78%; the deep participation of dual-teacher teachers (e.g., enterprise job shadowing and two-way lectures) provides key support for the realization of the Civic-Concern in the curriculum. In the future, it is necessary to deepen the physical cooperation mechanism between schools and enterprises, develop a digital Civic and Political Resource Base, and promote the dynamic upgrading of course content to match with the industry, so as to provide a sustainable path for vocational education to “cultivate morality and nurture people”.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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