

Theoretical Reconstruction and Practical Paradigm Analysis of "Curriculum-based Labor Education" in Higher Vocational Colleges from the Perspective of OBE Theory

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Abstract: In view of the current practical predicaments in the curriculum implementation of labor education in higher vocational colleges, such as scattered goals, insufficient integration with professional skills training, and the virtualization of evaluation mechanisms, this study attempts to introduce the concept of outcome-based education (OBE) in an attempt to seek systematic solutions. The paper aims to go beyond the superficial understanding of simply equating labor education with labor or activity, and based on the characteristics of vocational education types, systematically explain the intrinsic fit of OBE and curriculum-based labor education in the three dimensions of demand-oriented, competency-based and continuous improvement. Based on this, the study follows OBE's core principles of reverse design, student-centered, continuous improvement and aims to construct a closed-loop paradigm model that starts logically from labor literacy output and runs through the entire process of goal setting - curriculum integration - implementation assurance - evaluation feedback. With the aim of providing a clear and feasible theoretical framework and action roadmap for higher vocational colleges to deepen the reform of curriculum labor education and effectively enhance the effectiveness of education.

Keywords: Outcome-Based Education; Higher Vocational Education; Curriculum Labor Education; Theoretical Reconstruction; Paradigm Model

1. Problem Presentation: The Practical Dilemmas and Paradigm Transformation Demands of Curriculum-based Labor Education

The full integration of labor education into the

higher vocational curriculum system is an important measure to implement the educational policy of five-education integration. However, through research on the current situation of several higher vocational colleges and literature analysis, it is found that the current implementation of curriculum labor education is far from achieving the expected results. Its internal contradictions and external constraints are intertwined, forming multiple practical predicaments and calling for a fundamental paradigm shift.

1.1 The Goals are Suspended and Difficult to Implement

At present, the goals of labor education in higher vocational colleges are mostly set at the macroscopic conceptual level, such as promoting the spirit of labor, the spirit of model workers, the spirit of craftsmanship, cultivating the spirit of labor of diligence, frugality, struggle, innovation and dedication, etc [1]. However, these top-level concepts have not been systematically decomposed and transformed into specific and measurable graduation requirements at the professional level through the scientific taxonomy of educational objectives, and further refined into observable, evaluable and operable classroom teaching objectives in each course (especially core professional courses and practical training courses). The ambiguity and hierarchical breakdown of the goals have left front-line teachers at a loss when designing their teaching, not knowing where to start the labor and where to go the education. As a result, labor education is prone to become an empty slogan or a temporary task outside of professional teaching, unable to be truly embedded in the texture of knowledge imparting and skills training, and thus finds itself in an awkward situation of soul not attached to the body, and its educational function is naturally difficult to take root.

1.2 The Implementation of Two Skins and Insufficient Integration

This is the most prominent contradiction at present. In many institutions, labor education is still accustomed to the traditional model of separate courses (such as the compulsory course Introduction to Labor Education) or additional activities (such as organizing public welfare labor and cleaning). This model isolates labor education from the professional education system in terms of time, space and content, creating a parallel track of professions for professions and labor for labor. It is difficult for students to experience the value of labor, refine the quality of labor, and elevate the emotion of labor in real professional learning situations, especially in the process of solving complex technical problems and completing comprehensive practical projects. This physical superposition rather than chemical integration approach cuts off the intrinsic unity of labor and skill, knowledge and action, leading students to cognitive biases and viewing labor education as an additional burden or an activity unrelated to future career development, seriously weakening the immersive, generative and transformative educational effectiveness that labor education should have.

1.3 The Absence of Evaluation and the Blurring of Feedback

Scientific and effective evaluation is the navigator and corrector of educational quality. However, there is a common three more and three less phenomenon in the evaluation of curriculum-based labor education in current higher vocational colleges: namely, there are more summative and terminal evaluations and less process and formative evaluations; Subjective and descriptive evaluations (such as activity reflections and insights) are more common, while objective and evidence-based evaluations are less frequent; There are more evaluations of labor outcomes (such as works, reports), and fewer evaluations of implicit qualities such as labor concepts, labor habits, and teamwork spirit. The subjects of evaluation are often limited to teachers or counselors, lacking the multi-faceted participation of enterprise mentors, peers, and students themselves. Due to the lack of a systematic, scientific and operational evaluation index system and feedback improvement mechanism,

educators cannot accurately diagnose the weak links in the formation of students' labor literacy, nor can they judge the actual effects of various teaching measures [2]. This makes the implementation process of curriculum-based labor education almost blind, making it difficult to make targeted adjustments and optimizations, and quality assurance is out of the question, falling into a vicious circle of low-level repetition.

1.4 Resources are Scattered and There is Insufficient Coordination

The deepening of curriculum-based labor education is a systematic project that requires strong resource guarantees and efficient collaborative mechanisms. In reality, the weakness of the support system is manifested as follows: First, the shortage of teachers' capabilities. Many professional teachers themselves have a shallow understanding of labor education and lack the ability to design and implement the elements of labor education organically into professional teaching; Second, there is a lack of teaching resources, such as labor education case libraries, loose-leaf textbooks, digital resources, etc., which are closely integrated with the profession and reflect the new business forms and norms of the industry; Third, the collaboration between schools and enterprises is superficial. The leading role of enterprises in labor education has not been fully exerted. The cooperation has mostly remained at the level of providing internship positions and has not been deeply involved in the formulation of labor literacy standards, the implementation and evaluation of the teaching process. In addition, there are often problems of unclear responsibilities, poor communication and insufficient synergy among departments such as academic affairs, student affairs, publicity and secondary colleges within the school, making it difficult to form a big labor education pattern of collaborative education.

The underlying cause of this predicament lies in the fact that the current implementation model of curriculum-based labor education in many higher vocational colleges has not fundamentally broken away from the traditional supply-oriented and experience-driven path. The logic is we carry out labor education based on what resources (teachers, venues, traditions) we have, rather than first asking what kind of core labor literacy our students need to form for their future

career development and how we should design the entire education system to ensure the achievement of these literacy. This paradigm is no longer able to adapt to the new requirements for the comprehensive quality of workers in the rapid upgrading of industries, nor can it meet the intrinsic needs of students' all-round development. Therefore, promoting the fundamental transformation of curriculum-based labor education from a loose, casual, add-on combination of activities to a rigorous, systematic, and embedded educational paradigm has become an urgent strategic task for the reform of higher vocational education. OBE, as an advanced paradigm widely validated in international engineering and vocational education that reverse-designs, forward-implements and continuously evaluates and improves the entire educational process centered on students' learning outcomes, with its distinct core concepts of outcome-oriented, student-centered and continuous improvement, It provides a highly insightful theoretical mirror and a strong practical guide for systematically resolving the aforementioned predicaments and achieving a paradigm upgrade and quality revolution of curriculum labor education.

2. Logical Fit: Deep Coupling of the OBE Concept with Curriculum-based Labor Education

The OBE concept and the reform demands of course-based labor education in higher vocational colleges are not merely theoretical grafting or methodological application. There is a profound and multi-dimensional resonance and coupling between the two in terms of the value orientation of educational philosophy, the internal logic of teaching design, and the operational mechanism of quality assurance [3]. This coupling constitutes the rational and inevitable basis for the reconstruction of the OBE-guided curriculum-based labor education paradigm.

2.1 Orientation Consistency: From Subject-Centered to Student Development-Centered

Traditional educational models, including some traditional labor education practices, tend to focus on what is taught - that is, the complete transmission of a specific subject knowledge system, or the mechanical training of a specific labor skill. The OBE paradigm achieves a fundamental shift: it unwaveringly positions the

value anchor of all educational activities on what students can ultimately acquire and do - that is, the key abilities, qualities and characters internalized by students after the educational process. This shift is highly isomorphic to the essential purpose of curriculum labor education. The fundamental purpose of curriculum-based labor education is not merely to teach students a specific labor skill (which falls within the realm of vocational training), but rather to promote the formation of correct labor values, positive labor attitudes, good labor habits and transferable general labor abilities (such as teamwork, striving for excellence, problem-solving, etc.) through curriculum-based carriers. Ultimately, it aims at the all-round and lifelong development of future professional people and social people. OBE and Curriculum labor together shift the ultimate concern of education from the container of knowledge to the growth of the whole person, embodying the essence of the people-oriented modern educational philosophy.

2.2 Design Reversibility: from Pre-Set Starting Point to Result First

This is the most revolutionary and methodological aspect of the OBE in addressing the current problem of the vagueness of curriculum labor education goals. The OBE adheres to the reverse design principle, requiring educators to first define clearly and specifically the demonstrable graduation requirements that students should meet after completing their educational experience, just as engineers define product specifications. Then, based on this, reverse-deduce and design the curriculum system, teaching content, teaching strategies and evaluation methods that support the realization of these outcomes. This logic provides a clear framework for curriculum-based labor education: it forces us to first systematically answer What are the key and specific labor qualities that vocational college students should possess for the future workplace and modern society? And describe these qualities as observable and measurable behavioral indicators. Then, using this as a target blueprint, reversely examine all existing courses (including public, specialized, and practical courses), re-plan which courses, in which teaching links, and in what way undertake the responsibility of cultivating a specific labor literacy, and ensure that every gear in the curriculum precisely engages to drive the ultimate goal of labor literacy output. This

completely overturns the traditional model of forward arrangement of activities based on existing resources and experience.

2.3 Process Continuity: From One-way Indoctrination to Closed-Loop Improvement

OBE views the educational process as a dynamic, excellent-driven system of continuous improvement. It emphasizes the establishment of a closed loop of design - do - evaluate - feedback - improve. In this cycle, the core function of evaluation is not to grade students or make final judgments, but to gather multi-dimensional evidence of the achievement of students' learning outcomes, thereby diagnosing strengths and weaknesses in the teaching process and providing precise decision-making basis for the next round of teaching improvement. This mechanism has a strong enlightening and corrective effect on curriculum labor education. It transforms curriculum labor from an isolated activity that can be completed in one go or summarized at a certain stage into a living organism with the ability of self-reflection, self-diagnosis and self-evolution. By establishing a multi-faceted, objective, evidence-based evaluation and feedback system, it continuously tracks the formation trajectory of students' labor literacy and uses feedback data to constantly optimize teaching objectives, adjust teaching content, innovate teaching methods, and improve teaching resources. This closed-loop model embedded with the genes of quality improvement ensures that the educational effectiveness of curriculum-based labor education is not static but dynamically adjusted and spirally ascending in response to industrial development and changes in student needs, thereby establishing a long-term, self-driven endogenous mechanism for quality assurance.

3. Core Essence: The Triple Elevation of the Theory of Curriculum-based Labor Education from the Perspective of OBE

Under the perspective of the OBE theory, curriculum-based labor education in higher vocational colleges is endowed with three new and interrelated theoretical connotations. These three elements together constitute the essential characteristics of curriculum-based labor education in the OBE paradigm that distinguish it from the traditional model, and also form the theoretical foundation of its paradigm construction.

3.1 As a Strategic Plan for Defining Expected Outcomes

Under the OBE framework, the primary and core task of curriculum labor education is to carry out a refined strategic planning, that is, to transform and implement the macro and abstract labor education requirements in the national education policy, as well as the expectations of the social industry for the quality of workers, into a set of clearly structured, specifically expressed, measurable, achievable, and interrelated expected learning outcomes system. This system consists of at least three levels: an overall profile of the labor literacy of graduates at the school level; Labor indicators for graduation requirements at the professional level that reflect the professional characteristics (for example, the intelligent manufacturing major may emphasize rigor and perfection, while the modern service major may focus on customer first, collaboration and communication); Specific course objectives that are further refined at the course level and closely tied to the course content (for example, in the CNC Machining Practice course, the objective could be expressed as being able to operate the machine tool strictly in accordance with the 6S management standards and voluntarily complete the cleaning and maintenance of the equipment after processing). This precisely defined process, in itself a profound educational reflection and value clarification, ensures that labor education is on the right, goal-oriented track from the very beginning.

3.2 As a Systems Engineering that Drives Teaching Innovation

Once the output specifications of labor literacy are defined, these specifications must become the baton and engine that drives the transformation of the entire teaching system. This means that the content of curriculum-based labor education is far more than just adding some labor education content; it is a profound curriculum and teaching revolution. It demands: the reorganization of curriculum content - breaking down the barriers of the original curriculum, finding the organic integration points of professional knowledge points, skill points and elements of labor education (model worker stories, professional norms, safety ethics, innovative methods, etc.), and developing modular, project-based integrated courses. The

transformation of the teaching model - from teacher-based teaching to student-centered project-based learning, case studies, situational simulations, etc., allowing students to experience and understand labor in the complete process of learning by doing, learning by researching, and learning by creating. Integration and creation of teaching resources - In collaboration with industry enterprises, develop loose-leaf teaching materials, work manuals, virtual simulation training projects, real enterprise case libraries, etc. that incorporate labor education requirements. The core idea is to make the requirements of labor literacy permeate every capillary of professional teaching like blood, to achieve a deep combination of labor and skills at the cognitive, emotional and behavioral levels, rather than a simple mixture.

3.3 As a Closed-loop Mechanism for Ensuring the Quality of Education

From the perspective of OBE, curriculum-based labor education inherently encompasses a sound quality assurance system. The core features of this system are closed loop and evidence-based. It requires the establishment of a multi-subject evaluation system: the evaluation subjects are diverse (teachers, enterprise mentors, classmates, students themselves); Diverse evaluation methods (observation records, skills assessments, project defenses, reflection logs, growth portfolios, 360-degree feedback, etc.); Multi-dimensional evaluation (taking into account labor cognition, skill operation, emotional attitude, behavioral habits and outcome quality). More importantly, it emphasizes the analysis, feedback and application of evaluation data. By systematically analyzing the evaluation data, diagnosing the achievement of teaching objectives, the effectiveness of teaching methods, and individual growth blind spots of students, and promptly feeding back these diagnoses for revising curriculum objectives, optimizing teaching designs, adjusting teaching strategies, strengthening individual tutoring, and incorporating them into the periodic revision of professional talent training programs. In this way, a spiral ascending loop of evaluation - diagnosis - feedback - improvement - re-evaluation is formed, making curriculum labor education an intelligent system that can self-correct and continuously iterate and optimize, thereby continuously guaranteeing and enhancing the quality of its education.

4. Model Construction: The OBE Paradigm Framework for Curriculum-based Labor education in Higher Vocational Colleges

Based on the above theoretical analysis, this study constructs an OBE closed-loop paradigm model of curriculum labor education consisting of four core links, aiming to provide higher vocational colleges with a complete action framework from top-level design to implementation.

4.1 Core Objective System: Precise Definition of Output Specifications

Design the overall goals of school-based labor education based on policy documents such as Opinions on Comprehensively Strengthening Labor Education in Primary, Secondary and Higher Education Institutions in the New Era and in combination with regional economic development and industrial demands. Each professional teaching steering committee is responsible for translating and transforming the school-level overall goals into specific graduation requirement indicators that are in line with the talent cultivation orientation of their respective majors. For example, in mechanical engineering, craftsman spirit can be refined as having a rigorous and meticulous engineering mindset and being able to independently compile and optimize processing procedures for moderately complex parts; For business and trade majors, integrity and quality can be detailed as being able to adhere to the spirit of contract in simulated business negotiations or e-commerce operations and provide accurate product descriptions and quotations. Course leaders and teaching teams need to further break down the labor literacy indicators in the professional graduation requirements and incorporate them into the curriculum standards (syllabi) of each core course (especially the professional foundation course, core course, and comprehensive training course) to form clear and evaluable course labor education objectives [4]. These objectives should be on par with the knowledge objectives and ability objectives of the course to form a complete objective system for course instruction.

4.2 Curriculum Integration Path: System Design Realization Path

Design the contents of labor values, model worker cases, labor laws and regulations,

professional ethics, etc. into a series of micro-modules and organically integrate them into the teaching links of professional theoretical and practical courses [5]. With comprehensive, productive and innovative training projects or professional course designs as the core carrier. The project design itself should simulate or be derived from real work tasks of the enterprise, including clear division of labor, collaboration requirements, quality standards and innovation space. Guide students to comprehensively apply professional knowledge and skills in completing the entire workflow of the project (analysis, planning, implementation, inspection, evaluation), while experiencing the organization, discipline, creativity and challenge of labor, and achieving learning by doing and gaining through understanding of labor literacy. At the same time, make full use of the school-enterprise cooperation platform and place students in the real enterprise production environment, management culture, team atmosphere and professional norms through cognitive internships, on-the-job internships, full-time internships and other links. The guidance of enterprise mentors, strict production discipline, and real performance pressure are the most effective immersive training for students' attitudes towards work, professional adaptability, and sense of responsibility [6].

4.3 Support and Assurance System: Laying a Solid Foundation for Implementation

Implement specialized teacher training programs, through forms such as workshops, teaching salons, enterprise practices, and inter-school exchanges, to effectively enhance professional teachers' awareness of curriculum labor education, curriculum development capabilities, and the art of teaching implementation. Establish an incentive mechanism to incorporate the achievements of curriculum-based labor education into the teacher teaching evaluation, award and merit evaluation, and professional title promotion system [7]. Establish a school-enterprise Curriculum-labor education resource co-construction committee to jointly develop a batch of high-quality, shareable and integrated teaching resources such as loose-leaf textbooks, training project manuals, digital case libraries, micro-lesson videos, model worker/craftsman interviews, etc. Build on-campus labor education practice bases and virtual simulation platforms. Establish a collaborative working mechanism for

curriculum-based labor education led by the main leaders of the school, with the participation of academic affairs, student affairs, youth league committee, publicity, human resources, finance, secondary colleges and cooperative enterprises. Clarify the responsibilities of each department, hold regular joint meetings, coordinate resource allocation, solve cross-departmental problems, and form an educational synergy and institutional guarantee of full participation, full integration, and full coordination.

4.4 Evaluation and Feedback Mechanism: Establishing an Improvement Engine

Form multiple evaluation subjects through a combination of teacher evaluation, enterprise mentor evaluation, student self-evaluation and peer evaluation [8]; A multi-dimensional evaluation approach is implemented by integrating various methods such as observation records, internship reports, project defenses, labor portfolios and structured interviews. Based on this, establish a regular evaluation data analysis mechanism, apply the results to revise course objectives, optimize teaching content and improve teaching methods, and continuously feed back to the periodic revision of the talent training program to form a closed-loop continuous improvement system.

5. Implementation Challenges and Countermeasures

Although the OBE paradigm provides a systematic solution for curriculum-based labor education, its actual implementation in higher vocational colleges still faces many challenges:

5.1 Teachers' Concepts and Capabilities are Lagging Behind

Some managers and teachers are still accustomed to the knowledge-based and subject-centered teaching model, have a shallow understanding of outcome-based and reverse design, and have doubts or feel inadequate about spending energy on integration of labor and education in professional courses [9]. To address this, we will strengthen top-level promotion and dissemination of ideas, and unify thoughts and build consensus through policy interpretation, expert lectures, sharing of successful cases, and pilot projects within schools. The OBE and curriculum-based labor education reform are clearly listed as key tasks of the school's teaching reform and incorporated into the

performance assessment of departments.

5.2 The Evaluation System is Complex to Construct

Labor values, craftsmanship spirit and other high-level and implicit qualities are far more difficult to observe and measure than to memorize knowledge and operate skills. How to design evaluation tools that are both scientific and effective and convenient for front-line teachers to operate is a major challenge. In this regard, adhere to the principle of evidence-based and do not overly pursue complete quantification. Encourage each profession to develop performance evaluation scales centered on behavioral observation and key event documentation based on its own characteristics. Introduce information technology and use electronic portfolios, learning behavior analysis systems, etc. to assist in process data collection. Establish a school-based evaluation framework first and then gradually refine and improve it in practice.

5.3 Insufficient Depth of Collaboration between Schools and Enterprises

The intrinsic motivation for enterprises to participate in talent development, including labor education, mainly stems from mutual benefit. The key lies in how to design more flexible, in-depth, and enterprise-oriented cooperation models that make enterprises willing and able to deeply participate in the entire process of formulating labor literacy standards, implementing teaching, and evaluating. To this end, innovate cooperation models such as jointly building industrial colleges, enterprise studios, technology research and development centers, etc., and integrate labor education into the entire process of collaborative innovation and technical services. Establish a pool of enterprise mentors and offer substantial honors and rewards as incentives. Develop enterprise-recognized labor literacy certificates or job competence certificates to enhance the sense of participation of enterprises and the sense of gain of students [10].

5.4 Insufficient Systematic Support for the Development of Teachers' Ability to Integrate Teaching

Teachers are the ultimate executors of reform, and their shortcomings are the greatest constraint. Existing teacher training is often fragmented and

theoretical, lacking practical, companion-style guidance for the integration of curriculum and labor education [11]. To address this, a special program for enhancing the competence of teachers in curriculum-based labor education will be implemented. In terms of organizational forms, more practical methods such as workshops, teaching competitions, peer observations, and school-enterprise joint research and teaching will be adopted. In terms of content, focus on specific issues such as How to design integrated curriculum objectives based on OBE, How to explore labor education elements in professional courses, and How to design project-based teaching and evaluation. Establish on-campus curriculum labor education master teacher studios or mentorship systems to play a role in passing on knowledge and experience [10].

6. Conclusion

Introducing the OBE concept into curriculum-based labor education in higher vocational colleges is a profound paradigm revolution. It prompts us to shift our focus from the form of labor to the substance of education, and from the exploration of experience to the design of science. The paradigm model constructed in this paper aims to provide a framework of thinking and a guide to action for systematic reform. Of course, its implementation will inevitably face multiple challenges such as teacher concepts, evaluation techniques, and school-enterprise collaboration, which need to be continuously tackled and iterated through subsequent practical exploration. Future research should go deep into the front line of teaching, conduct action research based on this paradigm, and through the test and correction of practice, make it truly an important theoretical tool and practical path for empowering the high-quality development of labor education in higher vocational colleges.

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