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Research Based on OBE Concept About the Talent Training Mode of Industrial Engineering under the Background of Intelligent Manufacturing

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Abstract: With the rapid development of global Industry 4.0 and intelligent manufacturing, the traditional industrial engineering talent training model faces many challenges to meet emerging technologies and market demands. Therefore, this study aims to explore the training model of industrial engineering talents under the background of intelligent manufacturing based on the concept of results-oriented education (OBE), and strive to build an innovative talent training program that meets the needs of the industry. By integrating the OBE concept into the curriculum design, teaching methods and evaluation mechanism, through the implementation of the main measures of deepening the comprehensive reform of majors, strengthening the construction of teachers and grassroots teaching organizations, strengthening the construction of teachers and grassroots teaching organizations, enhancing the professional quality and comprehensive ability of students, and improving the teaching and scientific research ability of professional teachers, The quality and effect of teaching are guaranteed. It has explored and innovated the model of school-enterprise cooperation in the integration of production and education, practical teaching system and implementation path, and the quality and feedback mechanism of talent training, providing a new idea for the talent training model under the background of a new round of scientific and technological revolution.

Keyword: OBE Concept; Intelligent; Manufacturing; Industrial Engineering; Talent Cultivation Mode

1. Introduction

In the context of rapid advancements in smart manufacturing, the effective training of industrial engineering professionals has become increasingly critical. With the demand for skills evolving, traditional educational approaches are no longer sufficient. Outcome-Based Education (OBE) offers a promising framework to address these challenges by emphasizing clear learning outcomes that align with industry needs. OBE requires educators to define specific competencies that students must achieve by the end of their programs, focusing not only on knowledge acquisition but also on practical skills and problem-solving abilities [1]. In the realm of smart manufacturing, industrial engineers must possess interdisciplinary knowledge and skills, including teamwork, innovation, and project management [2]. Under the OBE framework, curricula can be designed to target these essential competencies, ensuring that graduates are well-prepared for the complexities of the industry. Furthermore, the integration of formative and summative assessments within OBE allows for continuous feedback on student progress, enabling educators to adapt their teaching methods to better meet learning objectives [3,4]. This responsive approach not only enhances student engagement but also fosters a culture of continuous improvement in educational practices. Ultimately, adopting the OBE model for industrial engineering education in the context of smart manufacturing will cultivate a new generation of professionals equipped with the necessary skills and knowledge to thrive in a rapidly changing technological landscape [5]. By bridging the gap between education and industry demands, OBE enhances the relevance of industrial engineering programs and contributes positively to the advancement of smart manufacturing.

2. Theoretical Basis of OBE Concept

The Outcome-Based Education (OBE) model revolves around the principle that educational systems should be designed to achieve specific learning outcomes that are clearly defined and measurable. In the context of industrial engineering within intelligent manufacturing, this model emphasizes the development of competencies necessary for success in modern industries. The core premise of OBE is that curriculum, teaching methods, and assessment strategies should all be aligned with the desired outcomes of education, ensuring that students not only gain theoretical knowledge but also practical skills relevant to their future careers [6].

Several key elements support the effective implementation of OBE. First, establishing specific learning outcomes is essential. These outcomes should reflect both the needs of the industry and the competencies required in intelligent manufacturing, such as problem-solving, teamwork, and technological adeptness [7]. Second, curricula must be designed to facilitate students' achievement of these outcomes, focusing on experiential learning opportunities, real-world projects, and collaborative exercises that simulate actual working environments.

Furthermore, continuous assessment is crucial in monitoring student progress and ensuring alignment with the defined outcomes. This approach allows for timely adjustments to teaching methods, enabling optimal student engagement and learning efficacy [8]. Finally, incorporating robust feedback mechanisms sustains student growth, allowing them to reflect on their learning experiences and identify areas for improvement. By prioritizing outcomes, the OBE model enhances the relevance of industrial engineering education and equips graduates with the skills needed for success in the dynamic landscape of intelligent manufacturing [9].

In summary, the OBE framework provides a solid theoretical foundation for industrial engineering talent development, aligning educational practices with real-world demands.

3. Development Demands for Industrial Engineering in the Context of Intelligent Manufacturing

3.1 Definition and Characteristics of Intelligent Manufacturing

Intelligent manufacturing signifies a revolutionary transformation in production processes, characterized by the use of modern technologies to optimize efficiency, quality, and responsiveness. At its core, intelligent manufacturing integrates various digital technologies, such as the Internet of Things (IoT), artificial intelligence (AI), and machine learning, to create dynamic and adaptable manufacturing systems. This approach enables manufacturers to monitor and control production in real-time, facilitating improved decision-making based on data-driven insights.

A fundamental characteristic of intelligent manufacturing is its capability to enable smart factories. These factories leverage advanced analytics and IoT devices to collect and process vast amounts of data from various sources, including machinery, supply chains, and customer feedback [10]. Consequently, intelligent manufacturing empowers organizations to predict potential issues before they arise, optimize operational processes, and enhance product personalization. For instance, predictive maintenance relies on data analytics to identify trends indicating potential equipment failures, thus minimizing downtime and maintenance costs [11].

Moreover, intelligent manufacturing excels in customization and flexibility. The ability to respond swiftly to market changes and consumer preferences allows manufacturers to tailor products to specific needs efficiently. This adaptability is essential in maintaining competitiveness in today's fast-paced manufacturing environment, where customer demands are continually evolving [12]. Therefore, understanding the concept and characteristics of intelligent manufacturing is crucial in shaping the skillsets required for industrial engineers tasked with driving this transformation.

3.2 The Role of Industrial Engineering in Intelligent Manufacturing

In the context of intelligent manufacturing, industrial engineering assumes a pivotal role. Industrial engineers are responsible for optimizing production systems, integrating new technologies, and ensuring that all components of the manufacturing process operate cohesively [13]. The transition to intelligent manufacturing requires industrial engineers to redefine their traditional functions, emphasizing technologies and innovative solutions.

One of the critical responsibilities of industrial engineers in smart factories is systems integration. They must ensure seamless communication between various technologies, including IoT devices, automation systems, and data analytics platforms [14]. This integration is vital for generating valuable insights and facilitating agile responses to operational challenges. Furthermore, modern industrial engineers need to develop skills in data analysis, as understanding data patterns is essential in making informed decisions that enhance production efficiency [15].

Moreover, industrial engineers must cultivate a diverse skill set that includes both technical and soft skills. In a collaborative environment characterized by interdisciplinary teams, effective communication, problem-solving, and critical thinking abilities are crucial [16]. The ability to work across functional areas and lead teams through technological changes positions industrial engineers as key drivers of innovation in intelligent manufacturing settings.

In summary, the role of industrial engineering in intelligent manufacturing is multifaceted, emphasizing systems integration, data analytics, and the development of essential skills for collaboration and leadership. Industrial engineers are now at the forefront of transforming traditional manufacturing processes into intelligent systems that capitalize on emerging technologies.

3.3 Analysis of Current Talent Cultivation Strategies in Industrial Engineering

The current talent cultivation strategies in industrial engineering must adapt to the evolving demands of intelligent manufacturing. Several strengths characterize existing programs; they typically provide a solid foundation in engineering principles and methodologies [17]. However, notable weaknesses exist in their capacity to integrate practical experiences related to new technologies, particularly in data analytics and smart manufacturing systems.

One significant shortcoming of traditional educational models is the insufficient emphasis on experiential learning. While students may acquire theoretical knowledge, they often lack practical insights into how to apply these principles within intelligent manufacturing contexts. This gap can limit their ability to transition effectively into the workforce, where hands-on experience with advanced technologies is increasingly valuable [18].

Despite these challenges, the shift towards intelligent manufacturing also presents opportunities for educational institutions. There is a growing demand for skilled professionals who are equipped to navigate the complexities of modern manufacturing environments [19]. By redesigning curricula to incorporate hands-on learning experiences, industry collaborations, and interdisciplinary projects, educational programs can better prepare students for the demands of intelligent manufacturing [20].

Furthermore, adopting an outcome-based education (OBE) framework can enhance the effectiveness of talent cultivation strategies. This approach emphasizes competency development, focusing on what students can do with their knowledge rather than simply what they know. By aligning learning objectives with the skills required in industry, educational institutions can ensure that their graduates meet the expectations of employers in the intelligent manufacturing landscape.

In conclusion, the development demands for industrial engineering in intelligent manufacturing highlight the need for a clear understanding of the field's definitions and characteristics, the evolving role of industrial engineers, and an analysis of current educational strategies. By addressing these areas, educational institutions can cultivate a workforce equipped with the skills necessary for success in an increasingly intelligent manufacturing environment.

By exploring the various dimensions of development demands for industrial engineering in intelligent manufacturing, this analysis underscores the need for a proactive approach in reshaping education strategies to cultivate a workforce ready to meet modern challenges.

4 Design of Outcome-Based Education Talent Cultivation Model for Industrial Engineering in the Context of Intelligent Manufacturing

4.1 Establishing Talent Cultivation Objectives

Clearly defined talent cultivation objectives are essential in developing an effective education model that meets the demands of intelligent manufacturing. These objectives must align with both industry standards and technological advancements to ensure the relevance and applicability of the educational outcomes. The first step in establishing these objectives is to identify the specific competencies required in the field of industrial engineering. This includes a comprehensive understanding of intelligent systems, data analytics, and sustainable practices.

In line with industry needs, it is crucial to incorporate insights from industry stakeholders, including employers and industry experts, to define these objectives effectively. Stakeholder engagement ensures that the educational program reflects current trends and anticipated developments in intelligent manufacturing, thereby increasing the employability of graduates. The objectives should not only focus on technical skills but also emphasize critical thinking, communication, and collaborative problem-solving abilities that are essential in a multidisciplinary environment. Moreover, implementing an iterative process for regularly reviewing and updating these objectives is vital to remain responsive to the rapidly evolving industrial landscape.

4.2 Curriculum Framework Construction

Designing a curriculum framework that addresses the established objectives plays a pivotal role in the success of the talent cultivation model. A well-structured curriculum should encompass various course modules that effectively combine theoretical knowledge with practical application. The curriculum must be tailored to provide an integrated learning experience, where students can apply theoretical concepts to real-world scenarios, especially within intelligent manufacturing contexts.

It is essential to divide the curriculum into key modules that reflect different aspects of industrial engineering. These modules may include topics such as systems engineering, operations management, manufacturing processes, and data analytics. Coupled with these technical courses, soft skill development must also be integrated into the curriculum. For example, courses on leadership, communication, and project management can enhance students' abilities to work effectively in teams and manage projects in complex environments.

The combination of theoretical courses and practical experiences can be achieved through various pedagogical approaches. Incorporating hands-on projects and internships not only enriches students' learning experiences but also provides them with valuable industry exposure, reinforcing the relevance of their education. Moreover, collaborative learning through group projects can foster teamwork and enhance problem-solving skills, preparing students to thrive in collaborative work environments typical of intelligent manufacturing settings.

4.3 Teaching Methods and Assessment Mechanisms

The teaching methods employed within the OBE framework should be diverse and adaptable to meet varying student learning styles and industry demands. Case-based teaching and project-based learning are effective strategies in promoting active learning and critical thinking. By presenting students with real-life manufacturing challenges, they can develop innovative solutions while applying their theoretical knowledge in practical situations.

Furthermore, fostering an interactive classroom environment enhances student engagement and motivation. Incorporating technology-enhanced learning tools such as simulations and virtual labs not only aids in understanding complex concepts but also mirrors real-world applications in intelligent manufacturing. These interactive methods encourage students to think critically and engage with the material actively, leading to deeper learning outcomes.

Equally important is the establishment of an effective assessment mechanism that evaluates

students' achievement of the desired outcomes. Traditional examinations may not adequately reflect students' understanding of practical applications. Therefore, a combination of formative and summative assessments, including projects, presentations, and peer evaluations, should be implemented. Feedback mechanisms must also be integrated to provide students with constructive guidance for improvement. Regular feedback not only aids students in their academic journey but also prepares them for feedback-oriented environments prevalent in modern workplaces.
In conclusion, the design of an OBE talent cultivation model for industrial engineering within the context of intelligent manufacturing necessitates a systematic approach that encompasses clear objectives, a robust curriculum structure, and diverse teaching and assessment methods. This comprehensive model will ensure that graduates possess the technical expertise, soft skills, and practical experience necessary to succeed in a rapidly evolving industry.

5. Implementation Model of Talent Cultivation for Industrial Engineering Based on OBE Concept in the Context of Intelligent Manufacturing

5.1 Basic Steps for Implementation of the Model

The implementation of an effective talent cultivation model for industrial engineering, based on the Outcome-Based Education (OBE) concept, involves several foundational steps. The first step is to clearly define the objectives of talent cultivation aligning with the needs of intelligent manufacturing. This requires a systematic approach to designing a curriculum that integrates both theoretical knowledge and practical skills, ensuring that graduates are equipped with the competencies necessary for modern industrial challenges.
Next, it is essential to develop a curriculum framework that emphasizes hands-on learning and real-world applications. This includes incorporating project-based learning, where students can engage in practical projects provided by partnering companies. Furthermore, establishing a robust framework for continuous assessment and feedback is necessary. By evaluating student performance through a combination of formative and summative assessments, educators can ensure that learning outcomes meet industry expectations.
Additionally, crucial to the success of this model is the establishment of collaborative relationships with industry partners. By fostering partnerships with local businesses, educational institutions can facilitate internships, co-op programs, and collaborative projects, allowing students to gain valuable experience in a real-world setting. This partnership not only enhances the students' learning experience but also assists companies in identifying and nurturing potential future employees.
Overall, these steps create a structured pathway to implementing an effective OBE-based industrial engineering training model, ultimately leading to the cultivation of skilled professionals ready to meet the demands of intelligent manufacturing.

5.2 Resource Allocation and Assurance Measures for Implementation

Effective implementation of the OBE talent cultivation model requires substantial resource allocation and strategic assurance measures. A comprehensive approach to resource management is essential, focusing on faculty development, infrastructure enhancements, and industry engagement.
To begin with, it is vital to invest in faculty training and development to ensure instructors are well-versed in modern teaching methodologies and industry practices. Implementing mentorship programs for young educators, providing opportunities for them to gain practical experience in industry settings, and encouraging participation in academic conferences can enhance their teaching capabilities. Furthermore, institutions should engage industry experts as part-time instructors, thereby enriching the educational experience with real-world insights and practices.
Infrastructure also plays a critical role in the successful implementation of the OBE model. Educational institutions must develop modern laboratories and learning spaces equipped with the latest technologies used in intelligent manufacturing. This setup not only facilitates hands-on learning but also exposes students to the tools they will encounter in their careers.
Additionally, establishing a comprehensive

quality assurance framework is crucial. This framework should include mechanisms for regular evaluation of curriculum effectiveness, student performance, and faculty qualifications. By utilizing a three-tiered quality assessment system—comprising course evaluations, teaching assessments, and feedback from industry stakeholders—educational institutions can ensure continuous improvement and keep the training model aligned with industry needs.

In summary, resource allocation and assurance measures are fundamental to the successful implementation of the OBE-based industrial engineering talent cultivation model, ensuring that both students and faculty are adequately prepared to meet the challenges of intelligent manufacturing.

5.3 Achievements of the Implementation Model

The implementation of the OBE-based talent cultivation model in industrial engineering has led to significant and measurable achievements. One of the most notable outcomes has been the enhancement of students' professional capabilities. Graduates are reporting improved engineering practice abilities and increased innovation skills, as evidenced by their success in competitions such as the "Mechanical Innovation Design Competition." Since 2010, students have secured over 20 national awards and more than 200 achievements at provincial levels, showcasing their competencies and creativity.

Moreover, the implementation of this model has positively influenced the employability of graduates. Employers appreciate the practical experience and skills that students bring into the workplace, reflected in a high employment rate that consistently remains above 95%. This indication demonstrates that the cultivation model effectively prepares students for the workforce, enabling them to "fit in," "stay," and "thrive" in their roles.

Furthermore, the model has strengthened the teaching and research capabilities of faculty members. The establishment of a dual-qualified teaching team—comprised of educators with both academic and practical experience—has contributed to a richer learning environment. Currently, 75% of faculty members have relevant industry experience, resulting in a more engaging and applicable curriculum. This integration of expertise has led to significant scholarly contributions, including several educational reform projects funded by national and provincial bodies.

Lastly, the overall quality of education has improved notably through the establishment of a quality assurance system. By implementing structured feedback mechanisms and continuous evaluation processes, educational institutions have successfully established high standards for teaching and learning. There have been no significant incidents affecting teaching quality in recent years, with evaluations from students and supervisory assessments indicating a 100% satisfaction rate.

In conclusion, the implementation of a talent cultivation model based on OBE principles in industrial engineering has not only elevated student performance but also empowered educators and enhanced the overall quality of education, aligning it more closely with the demands of intelligent manufacturing.

This reformulation highlights the systematic approach to implementing an OBE-based talent cultivation model, delineating its steps and resource needs while showcasing its substantial achievements in academia and industry.

6. Implementation Measures of Industrial Engineering Talent Training Model Based on OBE Concept

Guided by the OBE educational philosophy and the construction of new engineering disciplines, a talent training system has been established that emphasizes the cultivation of applied abilities; Reform teaching methods and approaches centered around "student-centered" to stimulate students' interest and potential in learning; Through school enterprise collaboration, we have strengthened the cultivation of engineering practice and innovation and entrepreneurship capabilities, and established a new model and approach for cultivating high-quality industrial engineering applied talents with strong engineering practice and innovation and entrepreneurship capabilities, targeting advanced manufacturing industries, serving the local economic development in Hunan. We mainly focus on effectively formulating relevant measures.

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6.1 Main Measures for Deepening Comprehensive Professional Reform

6.1.1 Build a new model of school-enterprise collaborative education with the integration of production and education

Deepen the implementation of on-campus theoretical and experimental teaching + school-enterprise joint and diversified practical teaching, meet the development needs of key regional development industries and strategic emerging industries, adjust and optimize the professional structure, comprehensively promote the new model of school-enterprise collaborative education integrating production and education, take multiple measures to encourage and guide enterprises to deeply participate in the reform of professional teaching, and jointly build a professional teaching steering committee. To jointly build practical teaching bases, the integration of industry and education, as well as school enterprise cooperation in writing and education, has been constructed, as shown in Figure 1.

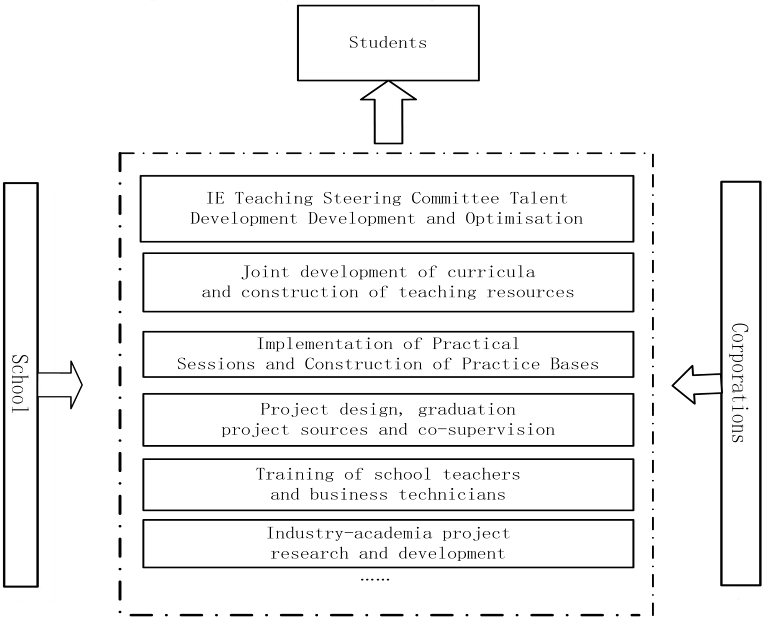

Figure 1. Model and Content of School-Enterprise Cooperation in the Integration of Production and Education

6.1.2 Build a demand-oriented talent training program

To meet the development needs of advanced manufacturing industry, conduct extensive research to understand the requirements of Hunan's local economic development on the knowledge and ability quality of applied talents, and combine the orientation of the university's applied talents training, reverse design the talent training program and curriculum system according to "internal and external needs -- training objectives -- graduation requirements -- curriculum system".

6.1.3 Reform the student-oriented classroom teaching mode

Guided by students' active learning, the reform of all-factor classroom teaching should be promoted from the aspects of teaching content, teaching methods, and academic evaluation, so as to realize the transformation from "teaching as the center", which focuses on knowledge imparts, to "learning as the center", which attaches equal importance to "knowledge + thinking mode + imagination", and fully mobilize students' learning interest and potential.

6.1.4 Implement the school-enterprise collaborative practice teaching system that highlights the cultivation of engineering ability

Closely focusing on service demand and results-oriented, with engineering technology application ability training as the core, the practical teaching system of "one core, two lines, four levels and ten links" has been built (Figure 2). It organizes and implements hierarchical and progressive practice teaching from class to class, from primary to advanced, from discrete to comprehensive, and from technology to engineering.

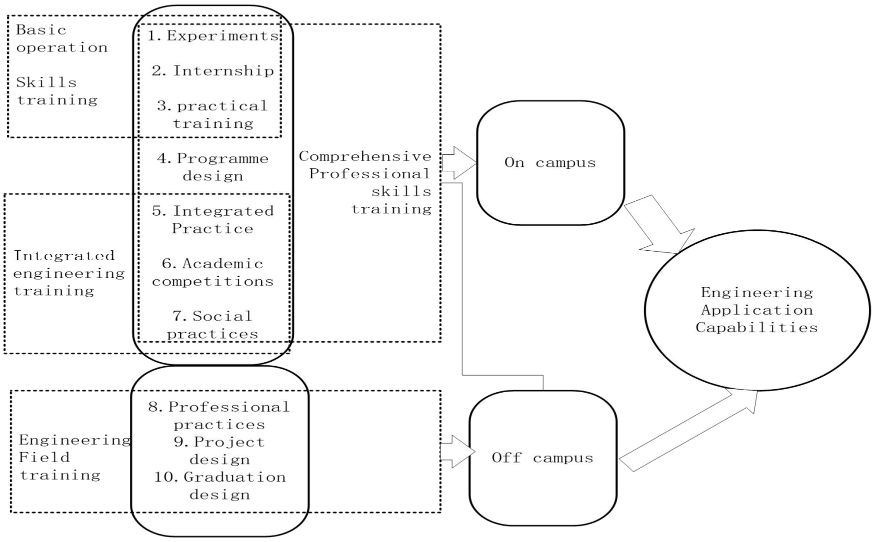

Figure 2. Practical Teaching System and Implementation Path

6.1.5 Establish a "trinity" talent training quality evaluation and feedback mechanism

Take the output as the orientation, establish the trinity evaluation and feedback mechanism of "curriculum evaluation, teaching evaluation and social evaluation" of talent training quality (Figure 3), and constantly improve the training objectives according to the evaluation of the professional talents by the society, so as to construct and improve the graduation requirements, curriculum system, curriculum outline, teaching process and teaching effect.

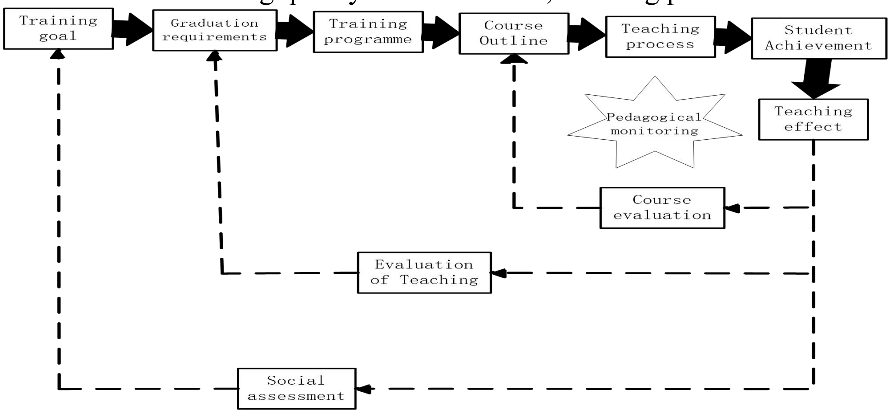

Figure 3. Talent Training Quality Evaluation and Feedback Mechanism

6.2 The Main Measures to Strengthen the Construction of Teaching Staff and Grassroots Teaching Organizations

(1) Formulate the "Young Teacher tutorial system", and set up guidance teachers for each young teacher to improve teaching ability;

(2) Formulate the "Implementation Measures for Hunan Institute of Engineering Teachers to obtain Engineering Practice Experience", support professional teachers to conduct internship and engineering training in enterprises, and improve teachers' engineering ability;

(3) Formulate the "Measures for the Management of Hunan Institute of Engineering Teachers' Further Study at Home and Abroad" to support teachers' further study and visit at home and abroad;

(4) Encourage and support teachers to carry out academic part-time jobs and participate in academic conferences at home and abroad, enhance academic exchanges, broaden their horizons and improve their academic level;

(5) Encourage teachers to participate in scientific research and transform scientific research results into teaching resources, so as to improve their scientific research level and teaching effect.

(6) Excellent experts from enterprises with practical engineering experience and certain academic attainments will be invited to the school to enrich the team of part-time teachers.

6.3 Main Measures to Strengthen the Construction of Professional Teaching

Quality Assurance System

(1) A three-level teaching quality monitoring system has been established, consisting of the school (college) teaching work committee, the school (college) teaching supervision team, the academic affairs office and teaching evaluation center, and the professional guidance committee. Clear requirements have been formulated for the quality monitoring subject, quality monitoring teaching link, quality monitoring teaching process, specific measures for quality monitoring teaching, and quality monitoring analysis feedback mechanism, which was shown in Figure 4.

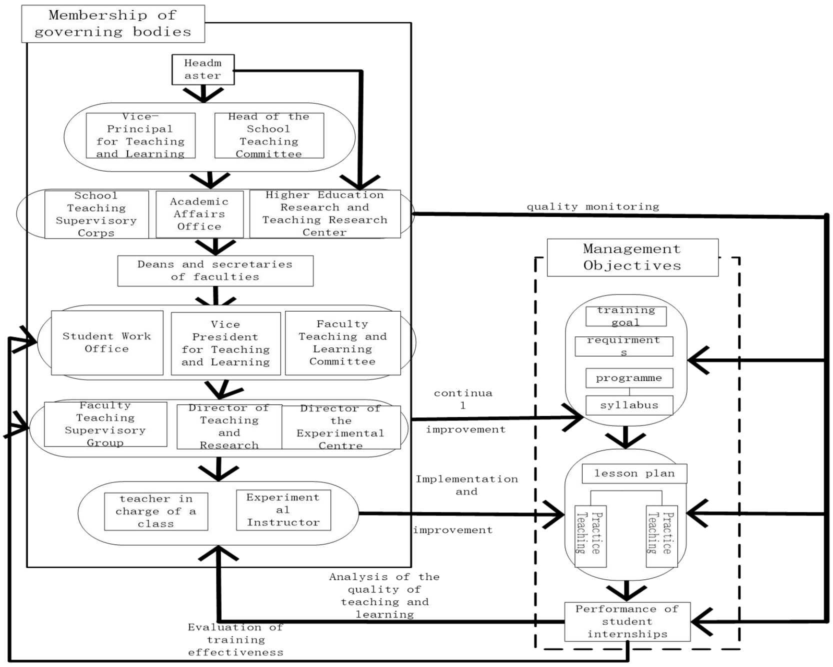

Figure 4. Teaching Management Structure

(2) Clear quality requirements have been formulated for the main teaching links, such as the formulation of training programs, the formulation and revision of teaching syllabuses, classroom teaching, course assessment, experiment teaching, comprehensive practice and course design, internship and graduation design, and curriculum system setting and teaching quality evaluation have been carried out regularly.

(3) Established an evaluation mechanism and method for personnel training program review, teaching syllabus support, teaching link assessment, teaching effect evaluation, curriculum goal achievement degree and graduation requirement achievement degree.

(4) The Implementation Rules for Strengthening the Construction of Teaching Style in the School of Mechanical Engineering have been formulated to regularly inspect teachers' classroom teaching, homework correction, course goal evaluation, graduation design and other teaching processes, check and analyze students' learning process and learning effect, and give timely feedback when problems are found.

7. Innovation Points and Reform Results

7.1 Students' Professional Ability Has Been Greatly Improved

The students' engineering practice ability has been comprehensively improved, and the innovation ability has been significantly enhanced. Students participated in the "Mechanical Innovation Design Competition" and other discipline competitions have made outstanding achievements. Since 2010, they have won more than 20 national awards and more than 200 awards at provincial level or above. Graduates with the concept of "go, stabilize and stay" are welcomed by employers, and the employment rate of students has been maintained over 95% for a long time.

7.2 The Teaching and Scientific Research Ability of Professional Teachers Has Been Effectively Improved

It has built a double-qualified team with "international vision and professional combination", and the proportion of teachers with enterprise-related engineering practice experience has reached 75%. In recent years, the teachers of this major have undertaken 2 new engineering research and practice projects, 7 industry-university-research cooperative education projects of the Ministry of Education, and 2 provincial-level teaching reform projects; More than 10 teaching research and reform papers have been published, and 5 teaching materials have been published.

7.3 The Teaching Quality Has Been Steadily Improved

Through the implementation of measures to strengthen the construction of professional teaching quality assurance system, the teaching process has been standardized and the improvement of teaching quality has been ensured. In recent years, no major teaching quality accidents have occurred in this major, and the teaching excellence rate of students and supervisors is 100%, and the teaching effect is good.

8. Conclusion

In the research on the talent cultivation mode of industrial engineering based on the OBE concept in the context of intelligent manufacturing, we conducted an in-depth analysis of the innovative points and effectiveness of the talent cultivation mode. Research has shown that the implementation of this model not only improves the quality of talent cultivation, but also effectively meets the urgent demand of modern industry for high-quality engineering and technical talents.

(1) Utilize school enterprise cooperation projects to create practical platforms for students and enhance their professional practical abilities. This study innovates the diversified forms of school enterprise cooperation, emphasizes the importance of practical teaching, and helps students learn and apply theoretical knowledge in real production environments. This kind of school enterprise cooperation not only enriches the course content, but also provides students with opportunities to directly access cutting-edge technologies in the industry, enhancing their employment competitiveness.

(2) Based on the results oriented teaching model reform, the overall learning effectiveness and practical ability of students have been improved. In terms of implementation effectiveness, survey data shows that students participating in practical projects have significantly improved their ability to analyze and solve engineering problems, and their performance during off campus internships has been highly recognized by employers. The accumulation of practical experience enables graduates to have stronger adaptability and higher professional ethics when entering the workplace. At the same time, the combination of the curriculum design and teaching plan reform with the OBE concept has made the curriculum objectives highly aligned with market demand. Through a results oriented teaching model, it has stimulated students' interest and initiative in learning, thereby enhancing their overall learning effectiveness and practical abilities.

Creatively combining the OBE concept with the industrial engineering training mode under the background of intelligent manufacturing. This article believes that the integration of OBE concept and intelligent manufacturing is not only an innovation in education mode, but also an inevitable requirement for industry development. The OBE concept emphasizes student-centered and focuses on learning outcomes, while the talent demand in the intelligent manufacturing environment is constantly changing, requiring students to have the ability to flexibly respond to new challenges. This combination provides a new perspective for talent cultivation in industrial engineering, making education more forward-looking and cultivating high-quality talents who can adapt to future needs.

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