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Research on the Construction of Talent Training Model in Application-oriented Universities Based on OBE Concept

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Abstract: *In order to realize the transformation and development of application-oriented universities, the reconstruction of talent training model is the most important. There are some blocking factors in the process of talent training in some application-oriented undergraduate universities in China, such as the vague talent training objectives, the closed and rigid training process, and the lack of multiple evaluation of training quality, which have adversely affected talent training, professional construction and discipline development. In essence, the cultivation of applied talents should be the implementation and practice of the educational concept of "facing the society and oriented by social needs", which is not consistent with the educational concept of Outcome-Based Education (OBE). Transform the traditional subject-oriented education model, based on the outcome-based education concept, taking the market demand as the guidance, and taking the ability training as the main line, so that the training goals of application-oriented universities can actively adapt to social needs, and ultimately enhance the ability of universities to serve regional economic development.*

Keywords: *Application-oriented university; Outcome-Based Education; Talent cultivation*

Introduction

At present, Chinese higher education has gradually moved from specialization and eliteization to a stage of diversification and popularization. The mastery of theoretical knowledge is no longer a single criterion for evaluating the quality of talents. Market-oriented assessment of whether students have the corresponding qualities and abilities has become the core of the appraisal of applied talent training model. The training model refers to the organic unity of the goals, specifications and methods of talent training (Yang, 2007). It is the guiding strategy for university talent training, which also includes training goals, graduation requirements, curriculum planning, evaluation and feedback. The educational concept of Outcome-Based Education (Hereinafter referred to as “OBE”) is oriented by students learning outcomes, which is quite consistent with the concept of application-oriented talent training based on social needs.This paper will introduce the connotation and key points of the OBE educational concept, and discuss how to construct the outcome-oriented and application-oriented talent training model in China based on the current situation and problems of the talent training model in China's application-oriented universities.

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The Present Situation and Challenge of Talent Training Model in Application-oriented Universities

Since the reform and opening up, the revision of talent training programs in Chinese universities has not solved the fundamental issues, but has been properly modified on the premise of maintaining the original ideas and courses. The talent training model of application-oriented universities should be different from that of research-oriented and higher vocational colleges, but should have its own characteristics of application (Huang & Zou, 2015). At present, the talent training model of application-oriented universities in China is still facing a series of challenges.

First, the orientation of training objectives is not clear. Many application-oriented university training programs simply copy official regulations or the experience of prestigious universities, presenting an "Eight-Legged Essay" structure without considering the types and characteristics of talents, resulting in a disconnect between the training goals and society.

Second, the culture process is closed and rigid. The traditional education model is the discipline oriented of forward design, and pays more attention to the completeness of the discipline system. Therefore, the talents trained by the closed discipline system are more likely to adapt to the society, rather than to satisfy or lead the society.

Third, there is a lack of multiple evaluation methods for training quality. In addition to the general indicators such as research papers and employment rate, we should also consider the evaluation content required by the market.

This study believes that the scientific and effective talent training model should consider the following questions: (1) What is the basis for the establishment of training objectives? (2) How should graduation requirements achieve the set talent training objectives? (3) How to plan the curriculum and achieve the training goal through curriculum and practice? (4) How to quantify and evaluate graduation ability and curriculum? The answers to these questions need to be redesigned according to the educational theory.

Theoretical Background and Analytical Framework

Connotation and Essentials of OBE

Outcome-Based Education Concept believes that before educating students, the ability and knowledge level to be achieved by students must be set before graduation, and then the corresponding curriculum mapping and educational structure must be constructed according to the set educational goals (Gu, Hu, Lin, Bao, Lu & Xiong, 2014). The output of student learning outcomes is the core and motivation of this educational theory. Chandrama Acharya pointed out that the educational concept is mainly divided into four steps for students learning outcomes, and this model is basically related to the elements of the PDCA Cycle (Plan-Do-Check-Act) (Acharya, 2003).

(1) Defining. Determining the expected learning outcomes of students is the first step of OBE. Student learning outcomes refer to the various results that students will obtain in specific learning, development and performance (Gullickson, 2008). The setting of student learning outcomes can mobilize students' own motivation and clearly tell students what you can do after completing their studies.

(2) Realizing. OBE concept emphasizes the reverse design of the achievement of learning outcomes, that is, taking the prescribed graduation ability as the starting point, planning students' curriculum plans accordingly, clarifying the contribution of each curriculum design to the expected learning outcomes, and forming a complete matching matrix.

(3) Assessing. The evaluation of student learning outcomes is “using various measurement tools to collect value-added information of learning outcomes and changes in attitudes, etc., to evaluate feedback and improve links against expected learning outcomes, and to achieve the purpose of improving student learning outcomes through a virtuous circle.” (Huang, 2013). The evaluation of student learning outcomes focuses on the learning process. In addition to the traditional indicators such as graduation rate and employment rate, it also focuses on evaluating whether students have made comprehensive and systematic changes in knowledge, comprehension, skills, values and behavior, so as to evaluate students' learning quality and individual development level (Huang, 2010).

(4) Using. There are two main aspects to the application of learning outcomes. On the one hand, learners use learning outcomes in work, study and life as a test; on the other hand, the application effect of learning output serves as the feedback of the construction of curriculum resources, so as to guide the optimal design of curriculum resources.

Construction of Applied Talent Training Model Based on OBE

Spady proposed that the talent training model based on the OBE concept follows four principles: Clarity of Focus on Culminating of Significance, Expanded Opportunity and Support for Learning Success, High Expectation for All to Succeed, and Design down from Ultimate Culminating Outcomes (Spady & Marshall, 1991). Among the above four principles, the most important "Design down from Ultimate Culminating Outcomes" is the foundation of universal design throughout the talent training model. According to the reverse design and forward implementation method based on the outcom-based education concept, our specific operating path in practice can follow the linear system path of "Talent Training Goals—Graduation Standards—Curriculum Mapping (Curriculum System Design)—Teaching Activities—Evaluation —Feedback and Continuous Improvement", as shown in Figure 1.

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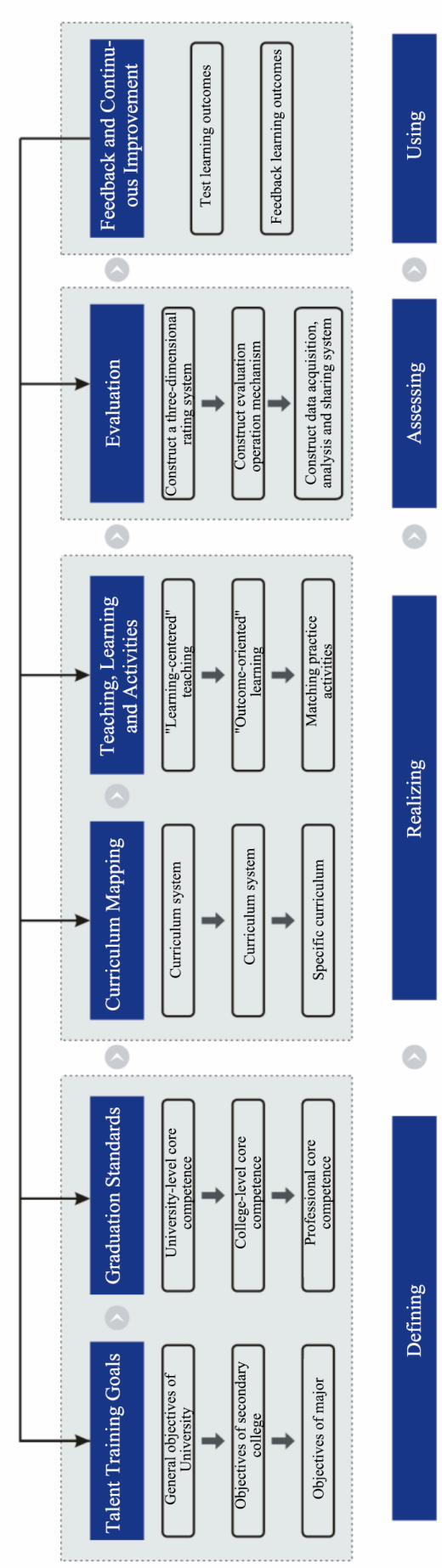

Figure 1 Logical diagram of the applied talent training model based on the OBE concept

Construction Process of Applied Talent Training Model Based on OBE Concept

The OBE education model essentially revolves around the main line of "Defining—Realizing—Assessing—Using" of its learning outcomes. First, the definition of students' expected learning outcomes is mainly based on the needs of industry development. First, locate training goals and graduation requirements, and decompose them into quantitative index points; second, reverse design the talent training system through quantitative graduation requirements indicators. Second, the achievement of students' expected learning outcomes requires that these corresponding relationships are consolidated into the requirements of each curriculum and teaching activity, so that the goal of talent training is reflected in the entire process. Third, the evaluation of students' expected learning outcomes is through the dual-cycle evaluation mechanism inside and outside the university, thereby optimizing the talent training system. Fourth, conduct inspections, feedback and continuous improvement based on the use of learning outcomes.

Defining Expected Learning Outcomes—Talent Training Objectives and Graduation Standards

The definition of talent training objectives should consider both the types of training objectives and the decisive factors of determining training objectives. The main bodies for formulating training goals include universities, secondary colleges and majors. The three are in a progressive relationship. The general goal of talent training in the university should take into account the country, industry, society, government, school orientation and students themselves; at the level of secondary colleges, in addition to the industry and industry needs, the college's positioning and characteristics should also be considered; and professional talent training goals are more considering factors such as professional characteristics, professional certification and student needs.

After the goal of talent training is clear, it is necessary to use this as a standard to determine the graduation requirements of students. We draw lessons from the training goals and core capabilities of Taiwan Normal University of China, as shown in Figure 2. The cultivation of applied talents should implement the principle of "competence-based". Its core competence is the ability and knowledge that students should achieve professional career and professional outcomes upon graduation, which is clear and specific.

Realizing Expected Learning Outcomes—Curriculum Mapping and Teaching Activities

Based on the reverse design of the OBE concept, we divide the applied talent training model into two spatial aspects: "curriculum mapping design" and "teaching, learning and practical activities". These two aspects promote each other and work together to cultivate students' knowledge, ability and quality.

The curriculum mapping takes the students' learning outcomes as the origin, takes the curriculum system as the core, and integrates the teaching plan, curriculum teaching and academic evaluation (Dong & Gong, 2014).

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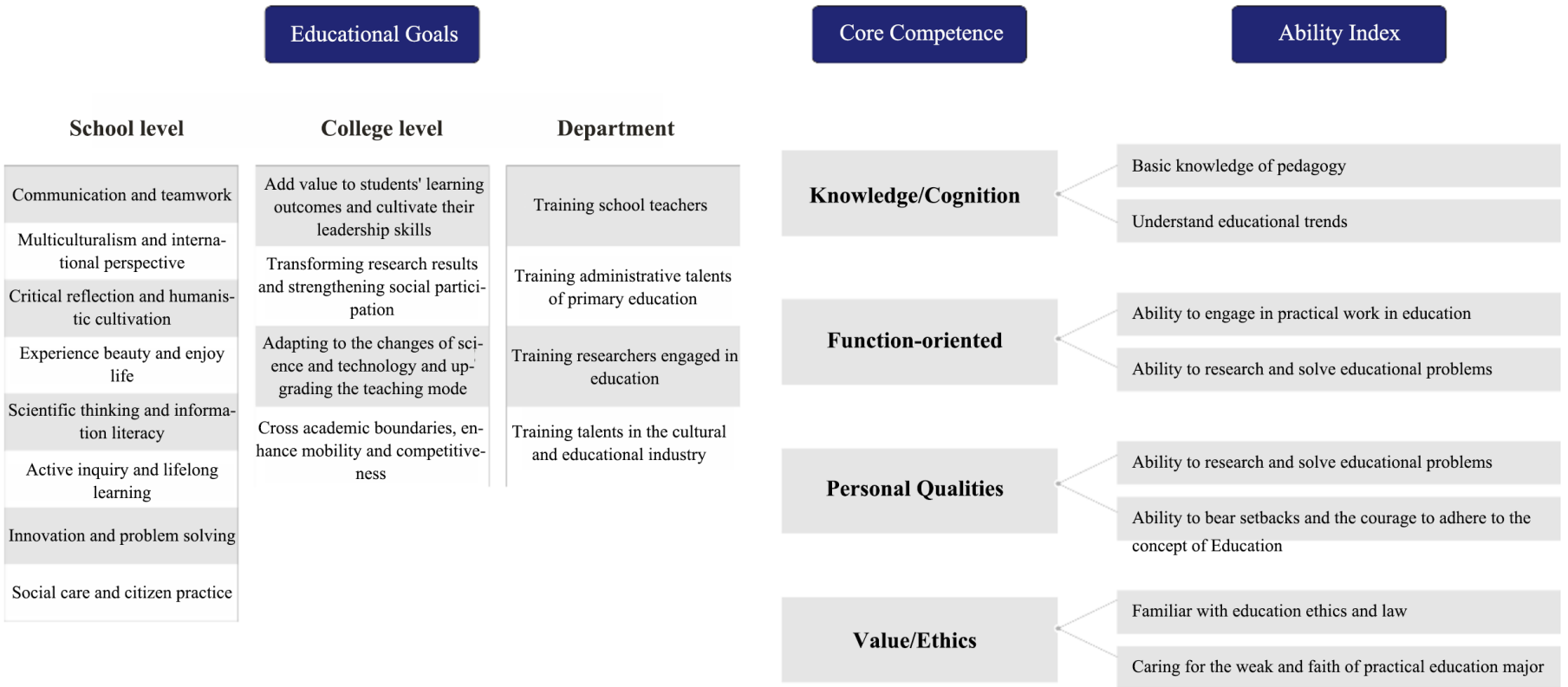

Figure 2 Training goals and core competencies of the Department of Education, National Taiwan Normal University

Curriculum mapping is particularly important to achieve the goal of talent training. It consists of quantifying index points for graduation requirements, setting up supporting courses, and putting forward requirements for the specific content of the courses, while emphasizing the application of core competence training. Therefore, for each course, we must not only clarify its contribution and role to the goal of talent training, but also clarify its content requirements, and the relationship between it and other courses. Therefore, the organic and optimized combination of various courses constitute the curriculum system. The curriculum mapping of the Department of Curriculum Design and Potential Development of National Dong Hwa University in Taiwan includes four parts: general courses (43 credits), college basic courses (21 credits), department core courses (27 credits), and Major elective courses (22 credits), etc. Among them, the core courses of the department are classified according to the four paths of career planning, and students choose the corresponding courses according to the career planning path.

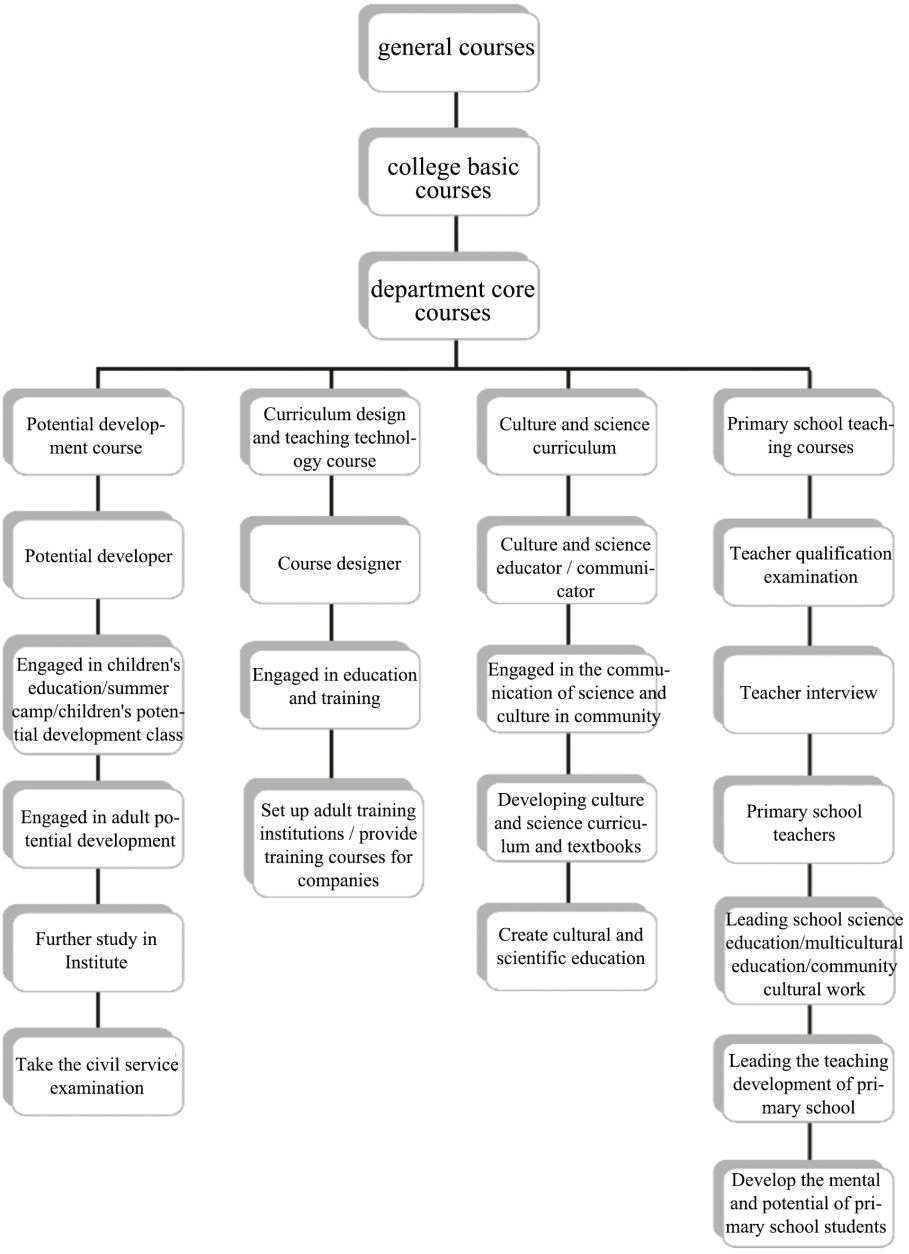

Figure 3 The core curriculum mapping of National Dong Hwa University in Taiwan

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The function of teaching practice activities is different from classroom behavior. Classroom teaching focuses on knowledge transfer, training students' professional ability; teaching practice activities mainly improve students' professional ability and overall quality. However the goals of the two are the same, both are to achieve the goal of professional talent training. The nature of teaching practice activities is to supplement, deepen or expand the classroom, and the two should be organically combined.

Assessing Learning Outcomes—Assessment on the Degree of Completion of Student Learning Outcomes

Fulks believes: "The evaluation of student learning outcomes refers to what students may do after completing a course or professional study." The purpose of learning achievement evaluation is to improve teaching and learning through reasonable evaluation, thereby improving the quality of talent training (Chen, 2016). The evaluation of student learning outcomes includes the following three steps.

Table 1 Three-dimensional index construction mode of talent training in application-oriented universities

Perspective	Dimension	Form
Process	Process index (whole process monitoring of the increment of knowledge, ability and quality)	Evaluation of freshmen's adaptability questionnaire / Evaluation of improvement questionnaire for students / Evaluation of graduates 'comprehensive effect by questionnaire / Employer satisfaction questionnaire evaluation / Alumni satisfaction questionnaire evaluation
	Outcome index (Students' learning output)	Test scores / Vocational certificates
Scope of assessment subject	Student individual index	Evaluation of freshmen's adaptability questionnaire / Evaluation of student improvement questionnaire / Evaluation of graduate comprehensive effect questionnaire
	Overall student index	Enrollment rate / Dropout rate / Graduation rate / Employment rate / Parents' satisfaction with student development / Employers' satisfaction questionnaire evaluation
Assessment points to content	Core index	Evaluation of freshmen's adaptability to enrollment / Evaluation of students' improvement questionnaire / Evaluation of comprehensive effect of graduates
	Peripheral index	Teaching staff construction / Education and teaching practice condition construction / System construction

First of all, from the perspective of the process, the evaluation of students learning outcomes includes outcome indicators and process indicators. The outcome index evaluates the output of students learning results, and the process index monitors the whole process of students' knowledge, ability and quality increment. The process of student learning not only includes the learning in school, but also extends to

future positions. Therefore, we need to establish a diversified and dynamic process index evaluation system. Secondly, the subject scope of the evaluation includes individual students and the whole. The former refers to the growth of individual students in knowledge, skills, attitudes, values and behaviors after receiving education; the latter refers to all students in an applied university as evaluation indicators, such as enrollment rate, dropout rate, graduation rate , employment rate, parents' satisfaction with student development, and companies' satisfaction with graduates, etc. Thirdly, from the point of view of the content of the assessment, it can be divided into core indicators and peripheral indicators. The core indicators refer to the various indicators that represent the learning outcomes of students' individual and overall development; the peripheral indicators refer to the indicators that guarantee the learning outcomes of students and provide services, such as the construction of teaching staff, the construction of educational and teaching practice conditions, and the construction of systems. Construct a three-dimensional evaluation system based on this framework, and then specifically design long-term tracking data collection points in each dimension.

Second, establish a student-centered evaluation operation mechanism. (1) Change the external evaluation into the independent evaluation within the school. As the internal main body of talent training, the school should collect and analyze data on the training process and quality of students, as well as monitor and adjust the training plan for a long time. As an external subject, the Education Administration Department can perform external supervision on the quality of training on behalf of the society on the basis of school data. (2) Under the school-based evaluation mechanism, strive to build an evaluation system involving enterprises, teachers, school administrators, parents, and third-party organizations. (3) The evaluation of the achievement of students learning outcomes should collect data continuously for a long time. Change the short-term exercise evaluation to the long-term tracking evaluation.

Third, construct the data collection, analysis and sharing system of students learning outcomes evaluation. On the basis of standardized data collection, application-oriented universities should independently set up evaluation data monitoring points according to their own school conditions, so as to realize the integration of basic data and school personalized data. More importantly, schools should change the concept of the use of data. The purpose of data collection and analysis is not to complete the evaluation task, but to provide decision-making basis for educational work and become a tool to promote students' learning. In the end, the analysis results of students learning outcomes can not only be used as a basis for evaluation, but also be open to the society through the platform, making it the basis for students to choose schools, social evaluation schools and enterprises to choose talents.

Using Learning Outcomes—Positive Feedback and Continuous Improvement

In the use of learning output links, the curriculum resources designed in this article emphasize two aspects: (1) Learners apply learning output to work, study and life as a test of learning output. However, due to limited conditions, this process is difficult to evaluate in time in the implementation; (2) The use of learning output is used as a feedback for the construction of curriculum resources to guide the optimization design of curriculum resources. This process is carried out through follow-up teaching practice activities.

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Conclusion

The OBE concept is not just the core principle of engineering professional certification. For application-oriented undergraduate universities, it is very difficult to overcome the mindset, and path dependence deeply restricts the managers and teachers. In the article, we tried to combine the OBE concept with the talent training model of application-oriented universities, and designed the linear development path of "Talent Training Goals—Graduation Standards—Curriculum Mapping (Curriculum System Design)—Teaching Activities—Evaluation —Feedback and Continuous Improvement" to explore the talent training model of application-oriented universities.

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