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Research on Talent Cultivation Model Construction of Biology Teacher Education Based on OBE Concept

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Abstract: *This study is carried out from the theoretical perspective of OBE education concept. Under the guidance of "OBE" education concept, professional talent training objectives need to be more clear and detailed, the connection between professional curriculum system and students' core ability needs to be more accurate, and the implementation of specific teaching activities needs to be more effective. In the research, we pay attention to both macro and micro research, adhere to the organic combination of theory and practice, closely connect with the current situation of talent cultivation in biology teacher education, and highlight the talent cultivation goal of biology education specialty.*

Keywords: *OBE concept; Biology; Teacher education; Model*

Teachers' professional certification adhere to the OBE concept of "student-centered, output-oriented and continuous improvement", and is the action guide of teachers' professional certification, which runs through the whole process of teachers' professional certification. In the notice issued by the Ministry of Education on the *Implementation Measures for The Certification of Normal Colleges and Universities (Interim)* (2017), the Ministry emphasized the evaluation of the training quality of normal majors by taking the learning effect of normal college students as the guidance and comparing with the core ability and quality requirements of normal graduates.

1. Formation and development of "OBE" education idea

The educational concept of OBE (Outcomes - Based Education) was proposed by William Spatty (1981), an American scholar, in *Output-Based Education Model:* The book *Controversy and Answers* makes an in-depth study of this model, believing that OBE Model is an education model that focuses on and defines the final learning outcome achieved by each student, and also an education model that reversely designs the curriculum system according to the final learning outcome expected by students. After ten years of development, the concept of OBE education has formed a relatively complete theoretical system, which is still considered as the right direction to pursue excellence in education.

The American Association for Accreditation of Engineering Education has fully accepted the concept of OBE and has adopted it throughout the engineering education accreditation standards. The Australian Department of Education defines OBE as: "Based on an educational process to achieve a specific learning output for students, educational structures and curricula are viewed as means rather than ends, and if they fail to contribute to the development of a specific ability for students, they need to be rebuilt". In an OBE education system, educators must have a clear vision of the competencies and levels students are expected to achieve upon graduation, and then seek to design appropriate educational structures to ensure that students achieve these desired goals.

2. Key points of implementation of "OBE" education concept

As an advanced educational concept, results-oriented education is the correct direction of higher normal education reform. Results-oriented education has formed a relatively complete theoretical system and operation model. The idea of OBE has become an important orientation of teacher education curriculum reform in normal colleges. The idea of OBE advocates "student-oriented" and reverse curriculum design based on the final results of students' learning. When reviewing the existing teacher education curriculum with OBE concept, it still shows the traditional tendency of "teacher-centered" and knowledge-oriented. In order to improve the cultivation quality and effect of biology teacher education, it is necessary to carry out reforms in teaching objectives, teaching methods,

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learning methods and evaluation methods.

First of all, OBE education concept provides an important theoretical basis for the reform of talent cultivation system in colleges and universities in the new era. As the core concept of the certification standard for teachers' major, OBE runs through the whole process of training normal university students and is an important theoretical basis for improving the quality of talent cultivation for teachers' major.

Secondly, education and teaching under the OBE education concept should take students as the center to allocate educational resources, organize courses and implement teaching, and evaluate the quality of professional talent cultivation by improving the core ability of graduates.

Finally, under the OBE education model, the teaching process needs to be "student-centered", "learning-results-oriented", and focus on cultivating students' abilities in self-exploration and self-learning, so as to improve teaching efficiency and quality.

3. Analysis on talent structure of biology teacher Education students

The biological Science (normal) major aims to cultivate teachers and teaching researchers who master the basic theories, basic knowledge and experimental skills of biological science, and are able to conduct teaching and research in middle schools, as well as high-quality talents who are engaged in research, technology extension and management in scientific research and technology extension departments.

3.1 Discipline knowledge structure

Professional should master the basic theory of biological science, basic knowledge and experiment, application skills, engaged in scientific research and modern education theory and practice of the initial training, to acquire the basic ability to engage in biology teaching, research and production.

3.2 Scientific research ability

Basic knowledge of biological science and basic experimental skills; Master the basic methods of data inquiry, literature retrieval and the use of modern information technology to obtain relevant information, and have the ability to engage in scientific research;

3.3 Education ability

Familiar with education laws and regulations, master and can initially apply basic theories of pedagogy and psychology, have good teacher quality and the ability to engage in biology teaching; Strong ability of investigation, research and decision-making, organization and management, oral and written expression, independent acquisition of knowledge, information processing and innovation.

4. Construction of talent training Model of Biology teacher Education under the concept of "OBE"

4.1 Identify learning outcomes

The final learning outcome (peak outcome) is both the end and the beginning of the OBE. Learning outcomes should be clearly articulated and measured directly or indirectly, so they are often converted into performance indicators. The determination of learning outcomes should fully consider the requirements and expectations of education stakeholders, including the government, schools and employers, as well as students, teachers and parents.

4.2 Building curriculum system

Learning outcomes represent a structure of competence, which is mainly achieved through curriculum teaching. Therefore, the construction of curriculum system is particularly important to achieve learning results. There should be a clear mapping relationship between the ability structure and the curriculum architecture, and each ability in the ability structure should be supported by a clear

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curriculum, which requires that each curriculum in the curriculum system should make a definite contribution to the realization of the ability structure. The mapping between curriculum system and ability structure requires students to have the expected ability structure (learning outcome) after completing the curriculum system.

4.3 Determine teaching strategies

The OBE places special emphasis on what students have learned rather than what teachers have taught, on the output of the teaching process rather than its input, on the research-based teaching model rather than the indoctrination model, and on personalized teaching rather than "carriage" teaching. Personalized teaching requires teachers to accurately grasp each student's learning trajectory, timely grasp each person's goal, basis and process. According to different requirements, develop different teaching programs, provide different learning opportunities.

4.4 Self-referential evaluation

OBE teaching evaluation focuses on learning outcomes, rather than teaching content, learning time and learning style. Multivariate and hierarchical evaluation criteria are adopted to emphasize the connotation of achieving learning outcomes and individual learning progress, rather than the comparison between students. According to the degree that each student can meet the educational requirements, different evaluation grades are given from unskilled to excellent, and targeted evaluation is carried out, so as to provide reference for schools and teachers to improve teaching through a clear grasp of students' learning status.

4.5 Step by step to the top

Divide the student's learning process into different stages and identify the learning objectives for each stage, from the primary to the advanced, and ultimately to the peak outcome. This will mean that students with different learning abilities will reach the same goal at different times, in different ways and in different ways.

5. Implementation and guarantee of teaching model

5.1 The "OBE" teaching model should be student-centered

As far as efficient classroom is concerned, its concept should be to better serve students. Therefore, teachers need to change the understanding of knowledge indoctrination in the past, change the emphasis on knowledge education into the emphasis on students' personality education, and pay special attention to the cultivation of students' comprehensive quality. Teachers should change from the traditional common and uniform education to pay more attention to the different needs of students; from paying attention to the arrangement of classroom links to paying more attention to learning, atmosphere and teacher-student relationship.

5.2 A teacher should acquaint himself with the existing knowledge of his students

If we want to make our teaching smoothly and efficiently, it is necessary to understand students' existing knowledge background and life experience, to understand students' thinking methods, to understand students' learning content and so on. In the process of students' understanding and filing, corresponding questions need to be put forward. The key is to cultivate students' habit of asking questions, cultivate students' thinking of asking questions, and cultivate students' ability to raise valuable questions.

5.3 Teachers should be fully prepared for the design of effective classrooms

Teachers should clarify the teaching content and its position and function in biology teaching, and prepare lessons systematically from the perspective of unit, whole chapter, whole volume and even the whole teaching material. The teacher is a few more rational knowledge to teaching material, want proper refinement to teaching material, not only master the connotation of knowledge, let the thought that teaching material contains even, method protrude come out, the ability when processing teaching

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material so can avoid serious and light, be familiar with one's skill. In addition, teachers should skillfully use teaching materials to prepare lessons. They can learn from biology guidance books and teaching materials to introduce a lot of knowledge and put forward and solve problems in a certain context. Teachers should consider whether these reference books can be used for reference, so as to make good use of the text resources of the teaching situation in the new teaching materials and give full play to the role of the new teaching materials.

5.4 The guarantee of effective classroom teaching strategy implementation

Teachers are encouraged to attach importance to the accumulation of self-teaching experience, as these experiences can serve as a basis for self-teaching reflection in addition to helping teachers become more familiar with the operation of the teaching site. In particular, teachers' tacit knowledge is concretized, and teachers are encouraged to make teaching files, conduct efficient classroom action research, and record teaching logs. Teachers can collect and sort out systematic and organized data on their own teaching reflection and comprehensive teaching performance, as well as the educational situation between students and schools, and share knowledge and innovation by using the community groups of schools.

6. Conclusions

1) Strengthen the student-centered and talent-oriented training orientation of normal education.

The student Center emphasizes the transformation from the traditional model centered on "teaching" to the new model centered on "learning", allocates educational resources and arranges teaching activities centering on the learning effect and personality development of normal university students, and takes the satisfaction degree of normal university students and employers as an important basis for the evaluation of the training quality of normal university professionals.

2) Construct the teaching and curriculum system of talent cultivation based on OBE concept. Output orientation emphasizes on the basis of social needs and all-round development of people, focuses on the "what they have learned" and "what they can do" after graduation, reverse-designs the curriculum system and teaching links, allocates the faculty and resource conditions, and evaluates the training quality of normal professional talents.

3) Continuous improvement emphasizes the focus on the core competence and quality requirements of normal university students (graduation requirements), the establishment of quality assurance mechanism for continuous improvement and the pursuit of excellence quality culture, so as to promote the continuous improvement of the training quality of normal university professional talents.

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