

# Discussion and Practice on Talent Cultivation Model Based on OBE Concept in Veterinary Medicine Graduate Education

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**Abstract:** To address the challenges in training veterinary master's students, it is essential to align with the core objectives of veterinary graduate education. This involves focusing on faculty development, course design, innovative teaching methods, university-industry collaboration, and reforming the evaluation system. By applying the outcome-based education model, new approaches to veterinary graduate training can be developed, particularly for applied talent development in agricultural universities serving local communities. This innovative model emphasizes ideological and political education, aiming to enhance students' abilities in knowledge and practical innovation, preparing them to be well-rounded professionals. The goal is to cultivate senior veterinary experts who are not only skilled in academic research and scientific inquiry but also committed to advancing agriculture, rural areas, and supporting rural revitalization. This approach provides a valuable framework for fostering highly qualified graduates who are both technically proficient and socially responsible.

**Keywords:** Outcome-based education; Veterinary medicine; Master's students; Talent cultivation mode

**Online publication:** December 2, 2024

## 1. Introduction

Universities shoulder the two core functions of talent training and scientific research, and graduate education is just the connection point of these two functions<sup>[1]</sup>, which is an important cornerstone of promoting national development and social progress. Under the background of "double first-class" construction, promoting the comprehensive reform of graduate education is a key measure to enhance the competitiveness of colleges and universities<sup>[2]</sup>. As the agricultural economy continues to advance, veterinary graduate students are expected to possess higher levels of comprehensive skills and problem-solving abilities to address challenges in agricultural production. Developing practical skills is essential for cultivating talents in agricultural colleges, as it enhances students' abilities in observation, analytical thinking, and the integrated application of knowledge—key competencies for effectively addressing real-world issues<sup>[3,4]</sup>. As China transitions

from being a large provider of graduate education to a global leader in high-quality graduate training, it is essential to follow a demand- and problem-oriented approach, pursuing a path of connotative, high-quality development to address issues like graduate students' limited practical abilities <sup>[1]</sup>. Several institutions, such as Tsinghua University, Northwestern Polytechnical University, and Xi'an Jiaotong University, have initiated successful programs targeting practical and research skills. For example, Northwestern Polytechnical University emphasizes a three-part approach—thesis selection, research training, and engineering practice—while Xi'an Jiaotong University's "Million Outstanding Engineering Talent Training Project" focuses on producing skilled engineers. Zhejiang University's "engineers" program further highlights this commitment to integrating teaching and training for graduates <sup>[5]</sup>.

The outcome-based education (OBE) model, which prioritizes learning outcomes and adaptability for future development, has been widely adopted internationally and is gaining attention in China. OBE emphasizes outcome orientation, student-centered learning, and ongoing improvement in teaching assessments <sup>[6-8]</sup>. At China University of Petroleum (East China), OBE has informed graduate-level academic English courses, aligning with the university's "double first-class" objectives to enhance students' academic skills and practical application abilities <sup>[9]</sup>. Additionally, Zhang *et al.* have applied OBE principles to integrate competitions with teaching for product design graduate students, increasing students' engagement, clarifying learning objectives, and enhancing professional skills, ultimately supporting the goals of graduate training programs <sup>[10]</sup>.

## **2. Analysis of pain points in talent cultivation for master's degree students in veterinary medicine**

The veterinary discipline of Foshan University was founded in 1958. It is a key discipline of Guangdong Province and a discipline of Pearl River Scholars in Guangdong Province. The animal medicine specialty of the discipline is a national characteristic specialty and a national first-class specialty. In 2013, veterinary medicine was awarded the academic master's degree, and since 2016, it has jointly trained doctoral students with other universities. The OBE concept requires that the training objectives and the implementation of the teaching process should ensure that students have a solid harvest from graduation. There are the following weak links in the graduate talent training mode of veterinary medicine based on the OBE concept.

### **2.1. Lack of precision in talent cultivation program positioning**

Under the OBE framework, universities are encouraged to continuously refine and align their training programs with industry needs, establishing responsive feedback mechanisms. However, the current graduate program in veterinary science lacks a clear output orientation. It falls short of fully adopting a "student-centered" approach, and its alignment with industry demands is insufficient. Furthermore, the multi-dimensional student evaluation system remains underdeveloped, resulting in a gap between program outcomes and the practical needs of veterinary enterprises.

### **2.2. Curriculum construction lags behind professional needs**

For effective talent training in veterinary science, especially in the context of emerging agricultural sciences, curriculum development should emphasize cultivating professionalism, a sense of responsibility, and practical diagnostic skills. The rapid advancement of veterinary medicine, with its broad and interdisciplinary content, underscores the need for up-to-date materials. Current textbooks lag in addressing emerging

infectious diseases and modern detection technologies, limiting students' ability to handle complex, real-world veterinary challenges.

To address these pain points, veterinary graduate programs should be reoriented to focus on holistic and national development objectives, cultivating graduates who support the CPC's leadership, demonstrate patriotism, uphold ethical standards, and possess a strong scientific perspective. Graduates should master foundational veterinary theories and skills, and be capable of independent professional and scientific research. Programs should also integrate environmental awareness, public health considerations, and foster a commitment to agriculture and rural revitalization.

### **3. Strategies for cultivating master's degree candidates in veterinary science**

The OBE-oriented model for veterinary graduate programs is designed around achieving predefined learning outcomes, guiding curriculum backward from these goals. The "new agricultural science" context further refines the focus on faculty development, curriculum reform, innovative teaching, industry partnerships, and diversified evaluation systems. This approach aims to equip veterinary graduates with the knowledge and skills to serve China's economic and veterinary industry needs, while also contributing to rural modernization and global veterinary advancements.

#### **3.1. Construction of the teaching staff**

##### **3.1.1. Strengthening the construction of the "double-qualified" team and emphasizing the training of young teachers' innovation and entrepreneurship**

Teachers are encouraged to serve at the grassroots level and intern in enterprises to explore practical problems in production and lay practical experience for PBL teaching. It is important to adhere to the application-oriented teacher training approach of starting from practice and going to practice, and cultivate a "dual teacher" teaching team with an enterprise background through measures such as sending teachers to enterprises for secondment, conducting practical skill training in enterprises, and encouraging teachers to serve as enterprise technical consultants.

##### **3.1.2. Improving teachers' information technology teaching skills and ideological and political education abilities**

The teacher team strengthens their own professional ethics construction and improves their professional qualities. It is also necessary to improve the teaching level of teachers and their ability to use modern teaching tools. The key is to enhance the awareness of ideological and political education tasks among professional course teachers and the professionalism of ideological and political education. We also strengthen the construction of the curriculum ideological and political teaching team for professional course backbone teachers and ideological and political course backbone teachers, deeply explore the ideological and political elements of the curriculum, and exert the collective strength and wisdom to effectively promote the reform and innovation of curriculum ideological and political teaching. The ideological awareness, political positioning, and information-based teaching methods of professional teachers are enhanced in various aspects of talent cultivation, and a development path of "organic integration of knowledge system education and ideological and political education" is constructed.

## **3.2. Curriculum construction**

### **3.2.1. Top-level design and collaboration among faculty and department teachers to promote the pace of ideological and political education construction in professional courses**

The school party committee, college party committee, teacher grassroots party branch, and party members jointly promote the construction of ideological and political education in the curriculum. The Party Committee of the college creates an environment for ideological and political education in the second classroom, and establishes an excellent model of the Sanquan education demonstration college; give full play to the exemplary role of teacher party members in curriculum ideological and political construction, and fully mobilize reform wisdom and exploration enthusiasm from the perspective of “cultivating talents for the party and the country.”

### **3.2.2. Construction of the ideological and political curriculum system for the “New Agricultural Science” course**

We incorporate aspects such as “knowledge exploration, skill cultivation, personality development, and value shaping” into the talent cultivation plan, highlight ideological and political education in the teaching syllabus, reconstruct course teaching content, and reshape course teaching objectives. Additionally, we innovate the educational philosophy, curriculum methods, and teaching methods of ideological and political education around the goals of education, talent cultivation system, curriculum content, teaching resources, practical aspects, and teacher team. Innovation in teaching philosophy and methods is reflected in various aspects such as case design, practical teaching, and resource construction. Open and shared online course resources are utilized to expand the temporal and spatial dimensions of curriculum ideological and political education design.

The first and second classrooms continuously expand the space for ideological and political education in the curriculum, improve the adaptability of ideological and political education in the curriculum, expand the coverage of ideological and political education in the curriculum, innovate the carrier of ideological and political education in the curriculum, and expand the practical activities of extracurricular science and technology competitions as a way of ideological and political education. The construction of the school-enterprise ideological and political practice education base extends the ideological and political connotation of the second classroom. Taking student party members as the main breakthrough point, it is imperative to establish a school-enterprise ideological and political practice and education base and form an effective integration and mutual promotion of party building and talent cultivation. Practical education activities are implemented for student party members to enter the base and society. The college cooperates with leading enterprises, and alumni enterprises sign enterprise homeroom teachers to establish school enterprise ideological and political practice education, forming a diversified “second classroom” collaborative education and dual promotion.

## **3.3. Small private online course diversified teaching methods**

The OBE philosophy emphasizes a student-centered approach and the active role of students in the learning process. In the cultivation of veterinary graduate talents, students are encouraged to actively participate in classroom discussions, scientific research projects, clinical practices, and other activities to cultivate their critical thinking, innovation awareness, and entrepreneurial abilities. By utilizing the teaching mode of “combining tradition with modernity” and adopting the teaching method of “combining online and offline,” ideological and political education in the curriculum is integrated into all teaching stages before, during, and after class, as well as in and out of class teaching<sup>[11]</sup>. Liu *et al.*, based on the disciplinary perspective, theory,

and methods in the teaching of agricultural graduate courses, took the construction of an ecological China, a beautiful China, and the strategy of rural revitalization as the starting point. By extracting the values of patriotism, social responsibility, and cultural confidence contained in professional courses, they reformed teaching methods and models and integrated ideological and political education into the entire process of course teaching<sup>[12]</sup>.

Based on the quality education of applied talents, we will build an information-based teaching resource library to connect with information-based teaching platforms, create high-quality online open courses, and enrich online resources for blended learning. Adopting the small private online course (SPOC) diversified blended learning model, we aim to achieve student-centered interdisciplinary, deep learning, and reflective learning, enhancing teamwork and innovative entrepreneurial thinking. A project organizational framework through group and problem-based learning is created, guiding students to analyze scientific research and clinical disease diagnosis, and enhancing their scientific research level and clinical practice ability.

### **3.4. Industry-university research school-enterprise cooperation**

Practical teaching is an important component of the OBE concept. The OBE philosophy emphasizes the continuous improvement and dynamic adjustment of the talent development process. The veterinary discipline continuously adjusts and optimizes its training program based on social demand, technological development, and feedback from employers, ensuring that the graduate students trained can adapt to industry development and market demand. Under the OBE philosophy, schools should actively cooperate with enterprises to jointly cultivate veterinary graduate students. Through school-enterprise cooperation, students can obtain more practical opportunities and employment channels. At the same time, universities should regularly collect feedback from enterprises on graduates in order to adjust their training programs in a timely manner and ensure that the graduate students they train can meet the needs of the industry.

Veterinary medicine graduate students participate in a large number of practical activities, such as clinical internships, research projects, social practices, etc. These practical activities should be closely related to students' professional direction and help them transform theoretical knowledge into practical operational abilities. Building off-campus practice bases for college students as a breakthrough point for practical teaching reform, emphasizing the integration of production and education, and creating a long-term mechanism for collaborative education through innovative ideas, systems, and models are important measures. The college has signed an agreement with external industry-university research cooperation, formulated teaching objectives and training plans for external practical education, designed and developed external practical projects that help consolidate students' professional knowledge and cultivate their innovative spirit, and jointly built an innovation and entrepreneurship practical teaching system. The practical teaching base mainly focuses on conducting scientific research and practical research on research projects in school-enterprise cooperation, undertaking practical teaching for graduate students, and providing research and production internships.

### **3.5. Scientific and reasonable evaluation system**

The OBE concept emphasizes the construction of a diversified evaluation system to comprehensively evaluate students' learning outcomes. The evaluation system should include formative and summative evaluation, focusing on continuous tracking and feedback of students' learning process and outcomes. Teaching evaluation has multiple meanings, including "evaluating students" to grasp their learning situation,

“evaluating teachers” to grasp their teaching situation, conducting process management to dynamically optimize the teaching process, and promoting teaching iteration to enable a self-improvement mechanism for the curriculum. Taking the optimization of evaluation mechanisms as an opportunity, we will explore the establishment of scientific and reasonable curriculum ideological and political evaluation indicators around teachers, students, educational content, and teaching methods. We will scientifically and effectively evaluate and test the effectiveness of teaching and education, improve teachers’ enthusiasm and initiative, enhance the effectiveness of curriculum ideological and political implementation, and cultivate high-level applied veterinary graduate talents with outstanding professionalism, skills, and qualities.

The course assessment and evaluation of veterinary master’s students adopt a “five-in-one” assessment method, which combines process and results, quantitative and qualitative, individual and team, science and humanities, and ability and literacy. At the same time, various evaluation tools are introduced, such as training reports, project assignments, oral presentations, etc., to more comprehensively reflect students’ learning situations. We establish a comprehensive assessment system, improve practical assessment and overall assessment system, and conduct assessments from three aspects: clinical technical practice, professional knowledge, clinical case diagnosis and treatment, and “learning, ability, and morality.”

## **4. Conclusion**

In summary, the talent cultivation model for veterinary graduate students based on the OBE concept focuses on students’ learning outcomes as the center. Through clarifying training objectives, reverse designing curriculum systems, strengthening practical teaching, constructing diversified evaluation systems, promoting school-enterprise cooperation, and providing feedback on training results, the comprehensive quality and innovation ability of graduate students is improved.

## **Funding**

- (1) Innovation Project of Guangdong Graduate Education (2022JGXM129, 2022JGXM128, 2023ANLK-080)
- (2) Foshan Philosophy and Social Science Planning Project (2024-GJ 037)
- (3) The Quality Engineering Project of Foshan University in 2023
- (4) Demonstration Project of Ideological and Political Reform of Guangdong Education Department (Guangdong Higher Education Letter [2021] No. 21)
- (5) Guangdong Provincial Department of Education, Provincial First-Class Undergraduate Courses (Guangdong Higher Education Letter [2023] No. 33)
- (6) Ministry of Education Industry School Cooperation Collaborative Education Project in 2023 (230703232312141)

## **Disclosure statement**

The author declares no conflict of interest.

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