

Exploration and Practice of Practical Education Pathways in Agricultural and Forestry Universities under the Background of New Agricultural Science Construction: A Case Study of the Veterinary Medicine Major at Sichuan Agricultural University

Yu Miao*, Wei Hou, Yilin Luo

Sichuan Agricultural University, Chengdu 611130, Sichuan Province, China

*Corresponding author: Yu Miao, 71189@sicau.edu.cn

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Abstract: The construction of new agricultural sciences is an important component of higher education in agriculture and forestry. It is conducive to accelerating the “Double First-Class” construction of agricultural and forestry colleges and universities, adapting to and leading the development needs of new business forms in the modern agricultural industry, and improving the quality of talent cultivation in agriculture and forestry. However, at present, under the background of new agricultural science construction, there are still some problems in the practice-oriented education of agricultural and forestry universities, such as the imperfect system and the insufficient depth of school-enterprise collaborative education, which have affected the effect of practice-oriented education. This paper analyzes the necessity of strengthening practice-oriented education in agricultural and forestry universities under the background of new agricultural sciences, dissects the dilemmas faced by the current practice-oriented education in agricultural and forestry universities, and proposes to improve the practice-oriented education system, jointly build a practice-oriented education alliance by schools and enterprises, organize special social practice activities and focus on cultivating college students’ scientific and technological innovation abilities, to improve the effectiveness and quality of practice-oriented education.

Keywords: New agricultural science; Agricultural and forestry colleges and universities; Sichuan Agricultural University; Veterinary Medicine Major; Practice education

Online publication: December 31, 2024

1. Introduction

Under the macro background of new agricultural science construction, agriculture and forestry colleges shoulder

the mission of training high-quality talents with modern agriculture and forestry characteristics. This mission requires agriculture and forestry colleges to be guided by the concepts of new agriculture, new countryside, new farmers and new ecological construction, constantly strengthen students' education in understanding and loving agriculture and strengthening agriculture, optimize the layout of agriculture and forestry majors, deepen curriculum ideological and political construction, and build a comprehensive and three-dimensional practical education system to enhance students' social responsibility, professional skills and innovation and entrepreneurship in a comprehensive way^[1]. Taking Sichuan Agricultural University as an example, this paper analyzes the effective ways to carry out practical education for the Veterinary Medicine Major of this university and discusses how to improve the quality of veterinary medicine professional talent training through these ways.

Based on the background of the construction of new agricultural science, the College of Veterinary Medicine of Sichuan Agricultural University actively organizes the students of veterinary medicine major to participate in the social practice activities of college students in the summer of "three rural areas." Students can rely on their professional knowledge, go deep into rural areas and farmers, carry out various practical activities to support agriculture, enhance their understanding of "three rural areas and farmers," and improve their practical ability and professional ethics, encouraging them to contribute to the revitalization of rural areas. In addition, the school and enterprises jointly build a practical education alliance, organize students to learn job skills in enterprises and relevant government departments, further improve their comprehensive ability and lay a good foundation for their future employment.

2. The necessity of strengthening practical education in agriculture and forestry colleges under the background of new agricultural science construction

2.1. The key measures to implement the fundamental task of moral education

The essence of constructing new agricultural science lies in encouraging agriculture and forestry colleges to embrace the responsibility of enhancing agricultural practices, promoting green and smart agriculture, and cultivating a greater number of talented individuals who possess both knowledge and passion for agriculture^[2]. This initiative not only facilitates a deeper integration of ideological and political education within the curriculum but also serves as a crucial element in fulfilling the fundamental task of moral cultivation while advancing high-quality development in agriculture and forestry education. Agricultural and forestry colleges should align their efforts with the context of new agricultural construction by fostering collaboration with government entities and enterprises, coordinating high-quality educational resources, implementing the concept of "three comprehensive educations," thoroughly integrating ideological and political education into practical training, addressing gaps in practical education, ensuring that ideological principles resonate deeply with students' minds and hearts, stimulating their professional identity, engaging them actively in agricultural endeavors, all while translating moral education into tangible practice to enhance the quality of practical instruction^[3].

2.2. Effective approaches to support rural revitalization

The rural revitalization strategy is pivotal for the development of a new agricultural science framework and serves as a significant strategic initiative aimed at addressing the challenges faced by agriculture, rural areas, and farmers in the contemporary era. Agricultural and forestry colleges and universities play a crucial role in nurturing professionals in fields such as agriculture, veterinary medicine, animal husbandry, and related disciplines. It is essential that these institutions actively fulfill their function as intellectual engines by producing

more qualified professionals to contribute to rural revitalization efforts ^[4]. In light of the ongoing transformation within agricultural practices, agricultural and forestry colleges must adopt an educational philosophy that emphasizes comprehensive, holistic education throughout all stages of learning. These institutions should foster collaboration with grassroots governments by organizing student participation in initiatives focused on “the three rural.” Such engagement will enable students to contribute effectively to the advancement of industries like animal husbandry and fruit and vegetable cultivation. Furthermore, encouraging student involvement in rural revitalization projects will enhance their capacity to support this vital national strategy more effectively ^[5].

2.3. The practical needs of cultivating new talents who know and love agriculture

The challenging working conditions in rural areas, coupled with a relative scarcity of both material and spiritual resources, have led many agricultural and forestry college students to hesitate about pursuing careers in these regions after graduation. This reluctance has resulted in a significant shortage of agricultural and forestry professionals in rural areas, thereby hindering the advancement of agricultural modernization. In light of this situation, it is imperative for agricultural and forestry colleges to actively promote ideological and political development within their curricula. They should adhere to the principles of practical education by organizing opportunities for students to engage in social practice activities and volunteer service initiatives. Such involvement will allow students to participate early on in rural revitalization efforts, serve local farmers, and foster a deep-seated appreciation for hard work along with knowledge about agriculture ^[6,7]. This approach will lay a solid foundation for advancing China’s agricultural modernization while addressing the pressing issues related to “agriculture, rural areas, and farmers.”

3. The difficulties faced by agricultural and forestry colleges in practice education under the background of new agricultural science construction

3.1. The practical education system needs to be improved

Under the background of curriculum ideology and politics, practical education in agricultural and forestry colleges is mainly based on curriculum practice, community activities, social practice and post practice, etc. However, the practical education system lacks top-level design and does not link up different forms of practical education work, resulting in a disconnect between teaching practice and social practice, which affects students’ grasp of vocational skills such as animal infectious disease prevention and treatment of common diseases. At the same time, the ideological and political education system is not connected with community activities and professional practical training, and the ideological and political education, counselors and professional teachers lack cooperation, which makes it difficult to form an educational force, which affects the quality of practical education in agricultural and forestry colleges ^[8].

3.2. The synergy between schools and enterprises needs to be improved

Collaborative education is an important guide for agricultural and forestry colleges to practice education, as well as an important way to improve the quality of agricultural and forestry personnel training ^[9,10]. However, at present, the effect of cooperative education between agriculture and forestry colleges and enterprises is not satisfactory. Although it provides corresponding internship positions for students majoring in veterinary medicine, it neglects to organize students to practice in rural enterprises, does not allow them to participate in the rural revitalization construction, and is difficult to stimulate their enthusiasm to participate in rural animal

husbandry and animal medical technical guidance. It is difficult to meet the needs of rural veterinary medicine talents.

3.3. The depth and breadth of practice education are not enough

The cooperation between agriculture and forestry colleges and enterprises in practical education needs to be expanded. At present, cooperative education methods such as student on-site internships and remote online teaching are mainly used, while the joint construction of a practical education base is ignored. As a result, enterprise experts do not participate in practical education, and students cannot participate in enterprise work, which affects the cooperation effect of practical education^[11]. In addition, the depth of school-enterprise cooperation in practice education needs to be deepened, and it fails to extend to the construction of veterinary medicine professional groups, volunteer service activities, and social practice guidance, which affects the development of students' vocational skills, making it difficult for them to meet the employment standards of enterprises, resulting in the weakening of practical education function^[12].

4. Practical education paths for agricultural and forestry colleges under the background of new agricultural science construction

4.1. Multi-department cooperation to improve the practical education system

Under the background of new agricultural science construction, agriculture, and forestry colleges should do a good job in the top-level design of practical education, strengthen the organization and leadership of practical education, establish and improve the unified leadership of the government committee, close cooperation between the Department of Student Affairs, the Office of Academic Affairs, the Office of recruitment, the League Committee and other departments, and the organization and management system with clear powers and responsibilities^[13]. Taking Veterinary Medicine major as an example, the college takes the connotation of new agricultural science construction as the guidance, closely follows the overall goal of veterinary medicine practice education, takes the new needs of modern industry and social development as the guidance, focuses on the cultivation of students' feelings about agriculture, agriculture and agriculture, carefully sets the outline and implementation plan, and follows the law of ideological and political work and the law of student growth. Urge ideological and political teachers, professional teachers, counselors, and career guidance teachers to participate in the practice of educating students, form a joint force for educating students, pay attention to the organic integration of students' knowledge, ability and quality, explore the chain and ladder mechanism for educating people, achieve the overall design and effective connection of multi-category practice projects, and steadily promote the practice and education of veterinary medicine. For example, the Academic Affairs Office and the Youth League Committee take the lead to combine the first classroom with the second classroom of social practice, organize the students of veterinary medicine to give full play to their professional and technical advantages, actively explore professional practice activities to assist agriculture and empower rural revitalization with knowledge. The College of Veterinary Medicine's Sannong -- National Medical Zhuomu Practice team vigorously carried forward the spirit of Lei Feng, organized more than 500 teachers and students for 9 consecutive years, and went deep into 22 counties and districts in Sichuan Province to help Liangshan Yi Area black pigs, beef cattle and Guangan and other local characteristics of poultry non-resistance green large-scale breeding, and was commended by the Central Propaganda Department for the "Four 100" advanced models of national learning Lei Feng volunteer service.

4.2. Adhere to the employment-oriented organization of special social practice activities

Agricultural and forestry colleges and universities should adhere to the employment orientation and organize students to carry out social practice activities to deepen the practical education and further improve the moral sentiment and practical ability of students ^[14]. For example, the organization and implementation of the “animation medicine dream factory - job internship” special social practice activities, organize students to go to the grassroots and the production line of enterprises, let them participate in rural revitalization construction and production practice, and enhance students’ sense of social responsibility. First, students can participate in beef cattle breeding, pet disease diagnosis and treatment breeding management and technology promotion, and other work, to achieve an effective combination of theory and practice, penetrate career planning education, stimulate their love for the profession, and enhance students’ professional identity. Second, constantly improve the construction of the social practice base, strive for more internship positions for students majoring in veterinary medicine, let them apply professional knowledge in production practice, let them experience the workplace culture in advance, and lay a good foundation for students’ future employment.

4.3. Comprehensively deepen school-enterprise cooperation, and jointly build a practical education alliance between schools and enterprises

Agriculture and forestry colleges should comprehensively deepen the integration of production and education, school-enterprise cooperation, and build a school-enterprise collaborative education model ^[15]. Based on the needs of education, industry and student development, the College of Veterinary Medicine of Sichuan Agricultural University organically integrates education and industry, makes overall planning of school and enterprise resources, and establishes a practical education community alliance with industry leaders such as Dekang Group, Juxingnongmu, AstraZeneca, Qilu Animal Protection, and Beijing Shengtaier, reshaping the functions of the university and industry. It has endowed the university with the functions of participating in industry development and talent training, and jointly explored and practiced the “new veterinary” talent training mode of integrating production and education. On the one hand, by inviting outside industry experts to participate in campus teaching, introducing cutting-edge scientific research results and typical cases of veterinary medicine, further improving the teaching content of veterinary medicine professional courses. On the other hand, let experts participate in teaching, so that students can master vocational skills in advance, to improve their comprehensive ability and improve the quality of school-enterprise cooperation practice education.

4.4. Focus on the cultivation of the scientific and creative ability of college students to improve their comprehensive quality

Under the background of the construction of new agriculture, agriculture and forestry colleges and universities should focus on serving the powerful agricultural country and the powerful science and technology country, and train high-quality new agricultural talents with the spirit of science and technology innovation, to serve the new form of the industry and the new demand of the new industry in the process of agricultural and rural modernization. Taking veterinary medicine as an example, the university takes experimental classrooms, off-campus practice platforms, off-campus practice base and social practice base as the main body, actively carries out research interest project plans, college students’ innovative training (practice) plans and professional skill competition plan, focusing on the key links such as experimental course content, professional basic literacy, practical training skills and scientific innovation practice ability. It has built a practical education model featuring broad knowledge, outstanding ability, comprehensive quality and integration into talents. The college also

actively improves the mode of integrating production and education and integrating science and education. For example, in the professional skills competition, because of the practical difficulties encountered in the production of enterprises, the school takes the form of unveiling and taking the lead, and students form interdisciplinary and cross-grade teams to independently complete the design, implementation and report writing of innovative research, to comprehensively cultivate students' scientific research ability and innovative thinking. Activities such as "Medical Lecturers" and "Medical Young Scholars Salon" have been organized to transform scientific innovation cases around them into vivid classroom materials, stimulate students' interest in scientific research and enhance their subjective initiative.

5. Conclusion

In short, under the background of new agricultural science construction, agriculture and forestry colleges should thoroughly implement the education concept of moral cultivation, actively promote the reform of practical education, organize multi-department cooperation, carry out cross-department cooperation in education, and improve the practical education system. Adhere to the employment-oriented, organize special social practice activities, organize students to participate in the "three trips to the countryside" activities, and encourage them to participate in rural revitalization construction. At the same time, the school should comprehensively deepen the cooperation between school and enterprise, jointly build a practical education alliance between school and enterprise, and build a "new veterinary" talent training model integrating moral education and talent education; Focus on the cultivation of scientific and creative ability of college students, improve the comprehensive quality of students, and cultivate high-quality new agricultural talents with scientific and creative spirit.

Funding

Ideological and Political Education Research project of Sichuan Provincial Education Department in 2023 (Special project for College counselors), "Research on Integrating Resources to Build a Community of Practical Education in Colleges and Universities" (Project No.: CJSFZ23-32)

Disclosure statement

The authors declare no conflict of interest.

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