

Research Article

Practice Courses Reform of Agriculture-Related Majors Under the Background of Farming and Reading Education—Taking < Skills Practice in Vine Yard > as an Example

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Abstract

Cultivation culture is a precious wealth developed and inherited in the long-term agricultural activities of our country. The combination of cultivation culture and labor education into practice courses can effectively realize the cultivation of contemporary college students' labor spirit, make labor education more practical. In view of the problems existing in the teaching of practice courses of agriculture-related majors, taking the course of "Skills Practice in Vine Yard" as an example, this paper probes into the establishment of teaching objectives, the reform of course contents, teaching methods and examination methods, etc. Promote the cultivation of new agricultural talents through these measures.

Keywords

Farming and Reading Education, Agriculture-Related Majors, Reform of Practice Courses

1. Introduction

Agricultural culture is a precious asset that has been developed and inherited in China's long-term agricultural activities. [1] By integrating agricultural culture with student labor education in practical courses, and through the spirit of struggle, ecological wisdom, and innovation contained in China's traditional agricultural culture, contemporary college students can be effectively educated in labor, which can effectively cultivate the spirit of labor among contemporary college students, inherit China's traditional agricultural culture, and make labor education more practical. [2] In 2021, the No. 1 central document of the Central Government clearly proposed the requirement of "carrying out farming education".

[3] In February 2021, the General Office of the Communist Party of China Central Committee and the General Office of the State Council issued the "Opinions on Accelerating the Revitalization of Rural Talents", requiring "to improve the talent training system of higher education, comprehensively strengthen agricultural education in agricultural universities, and make agricultural education related courses a mandatory course for students majoring in agriculture." [2] Labor education and practice course could matched well in high education. [4]

Life sciences are closely related to agricultural production, whether it is biology teachers in primary and secondary

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school classrooms or biotechnology workers fighting on the front line of high-tech, they are closely related to agricultural production. The major of grape and wine engineering offered by the College of Biology and Wine Engineering of Taishan University is a comprehensive discipline involving science, engineering and agriculture. In addition to the conventional forms of labor, a large number of experimental and practical courses are also offered, among which "pastoral skills training" is a targeted practical course for grape production.

Grapes are a traditional agricultural product, and the production of agricultural products cannot be separated from the understanding of agricultural seasons and traditional farming techniques. Wine belongs to industrial production products, which cannot be separated from factory production and engineering technology. In terms of professional education, even if it is related to agriculture, the Grape and Wine Engineering major is still an engineering major. The practical course is mainly a teaching process oriented towards employment and skill training, and is a key link in cultivating students' professional skills. [5] At present, the practical courses in Grape and Wine Engineering mainly include "Rural Skills Training" related to agriculture and "Wine Craft Training" related to industry. [6] The production of wine cannot be separated from good raw materials. [7] Good wine producers need to have a good understanding of the grape production process, which requires providing students with sufficient agricultural knowledge and production techniques in the teaching process. [8, 9] Taking the practical courses related to agriculture in Grape and Wine Engineering as the research object, this paper explores the typicality and representativeness of agricultural education in the reform of practical courses related to agriculture.

2. Current Situation of Course Teaching

According to the requirements of the development of the wine industry, referring to the International Organization for Grape and Wine (OIV) wine brewing standards and other similar professional training programs at home and abroad, combined with the actual situation of wine production in China, the courses of Grape and Wine Engineering were divided into four major curriculum systems. They are namely Grape Science (production of wine grape raw materials), Wine Brewing Science (wine production), Wine Engineering (brewing equipment and factories), and Wine Marketing Science (sales and management of wine market). [10-12]

Practice courses content aimed to strength students' skills. [13] Rural skills training is a compulsory course for the Grape and Wine Engineering major. It is an independent practical course which belongs to the Grape Science curriculum system. It is a practical teaching link in the courses of Grape Variety, Grape Cultivation, and Grape Disease and Pest Control. It is not only a prerequisite course for some professional courses, but also an indispensable practical link for cultivating and enlightening students' basic knowledge

and improving their comprehensive abilities. In terms of content setting, it mainly includes two parts: "Rural Skills Training I" and "Rural Skills Training II". The teaching time runs through the four seasons of the year, mainly through the basic experiments, comprehensive experiments, and design experiments of grape studies, enabling students to learn and master the biological characteristics of grapes, identify and master the characteristics of grape main varieties, seedling cultivation techniques, shaping and pruning techniques, soil, fertilizer and water management techniques, and prevention and control techniques of major diseases and pests. The course content relies on the annual management of vineyards in the south foot of Mount Taishan Mountain, directly faces the front-line production of wineries, and the teaching place is in the field and production workshop, which is the natural carrier of farming education. [14]

In the current rural skills training curriculum education, the teaching content focuses on agricultural skills cultivation, mainly focusing on vineyard labor and agricultural management techniques in the traditional agricultural field. The teaching team is mainly composed of teachers in this major, the subject thinking is relatively rigid, and the teaching content is not strongly related to emerging content such as intelligent agriculture. The number of off campus practical bases is relatively small and mainly focused on commercial production. The course schedule is relatively tight, and students have fewer opportunities and time for hands-on operations. The cultivation of labor awareness and spirit among college students in the course still needs to be further strengthened. Based on the current problems in the course, the research group has formulated relevant curriculum reform plans for course content and teaching methods.

3. Curriculum Reform Objectives

3.1. Analysis of Course Content

In the current 2021 training program for grape and wine engineering professionals in College of Biology and Brewing Engineering, Taishan University, the pastoral skills training course includes two parts: Skills Practice in Vine Yard I and Skills Practice in Vine Yard II. The course starts in the second semester of freshman year and the first semester of sophomore year respectively, covering the anniversary of vineyard field management. The main teaching content covers the skills of vineyard annual management, the production of vineyard management anniversary and the basic construction of the winery. The main teaching content were showed in Table 1 and Table 2. The teaching place is mainly the practice teaching base of Taishan University. The teaching form is mainly field practice. At the same time, the course has synchronous online teaching content on the Superstar Learning Platform. Field practice is mainly based on the cultivation of students' practical skills. Online courses are mainly theoretical support for field practice activities.

Table 1. Teaching Content of Skills Practice in Vine Yard I.

Experiment code	Content of Skills Practice in Vine Yard I
Experiment 1	Spring Management Techniques in Vineyard
Experiment 2	Investigation of Grape Phenology
Experiment 3	Summer Pruning Methods for Grapes
Experiment 4	Grape Seedling Reproduction Technology
Experiment 5	Grape Seedling Grafting and Reproduction Technology
Experiment 6	Grape Summer Pest Identification

Table 2. Teaching Content of Skills Practice in Vine Yard II.

Experiment code	Content of Skills Practice in Vine Yard II
Experiment 1	Vineyard Autumn Main Disease Identification
Experiment 2	Autumn Management Techniques in Vineyard
Experiment 3	Summer Pruning Methods for Grapes
Experiment 4	Grape Seedling Reproduction Technology
Experiment 5	Grape Seedling Grafting and Reproduction Technology
Experiment 6	Grape Summer Pest Identification

3.2. Setting of Course Teaching Objectives

According to the 2021 version of the "Grape and Wine Engineering Professional Talent Training Plan", the "Skills Practice in Vine Yard" course requires students to systematically master the biological characteristics of common grape varieties, learn to identify and distinguish main grape varieties, master grape seedling cultivation techniques, master grape annual management techniques and other practical management related technologies, and possess theoretical knowledge and practical skills in vineyard construction and daily management. Comprehensively study the current development status of vineyards and wineries both domestically and internationally, gain a deep understanding of the biological characteristics of grapes, systematically master the knowledge of grape variety selection, cultivation, and management, comprehensively understand the work schedule of vineyards in spring and summer, enhance the core literacy of grape and wine engineering, and lay a solid foundation for future work in the grape and wine industry and further scientific exploration.

In the current curriculum education, the teaching content focuses on skill development, with teachers in their respective majors as the focus. The subject thinking is relatively rigid, and the teaching content mainly focuses on vineyard

labor and agricultural management techniques in the traditional agricultural field, with weak connection with emerging content such as smart agriculture; The number of off campus practical bases is relatively small and mainly focused on commercial production. The course schedule is relatively tight, and students have fewer opportunities and time for hands-on operations. The cultivation of labor awareness and spirit among college students in the course still needs to be further strengthened.

3.3. Course Teaching Reform Ideas

Based on the current situation of the curriculum and taking the development of rural revitalization and new agriculture as opportunities, this project plans to optimize the teacher team, build a virtual teaching and research room, carry out course outline revision, and establish a course teaching and assessment mechanism with the characteristics of farming and reading education, with the first and second classrooms as the main battle field. It aims to strengthen students' labor spirit and consciousness, cultivate new era agricultural related college students who integrate knowledge and action, work hard, and take root in agriculture, rural areas, and encourage students to participate in rural revitalization, serve and build rural areas.

4. Teaching Reform and Practice of Skills Practice in Vine Yard Courses

4.1. Analysis of Learning Situation

The main target audience of the "Skills Practice in Vine Yard I/II" course is undergraduate students in the second semester of their first year and second year in Grape and Wine Engineering. According to the Training Plan for Grape and Wine Engineering Professionals of Taishan University, when students began to learn this course in the second semester of the first year, the professional course they learned simultaneously was Grapevine Variety, and the course they learned simultaneously in the first semester of the second year was Grapevine Cultivation. At this time, students just started to contact professional courses, and their understanding of grapes and wine was relatively limited. In teaching, they should pay attention to the timely supplement of theoretical knowledge.

4.2. Construction of Teaching Staff Team

By constructing a virtual teaching and research room for courses, combined with the resources of teachers from within the school and sister universities, we invite teachers majoring in Information and Computational Science to participate in the development of course plans and teaching. Starting from professional needs and industry development hotspots, we

conduct group or topic discussions to enhance students' cognitive level of the development of high-tech agriculture.

Invite winemakers and gardeners from Penglai production area and south production area of Mount Taishan to join the teaching team, and refine the characteristics of grape production phenology, management points and management difficulties in each production area into teaching topics, teaching videos or micro classes, supplemented by online conference guidance, to help students master the relationship between grape management anniversary and macro climate, region and ecology.

4.3. Reform of Teaching Methods

The course of "Skills Practice in Vine Yard" is mainly based on the practical operation in the field. According to the climate change and annual change in the production area, specific teaching items and teaching time are formulated every year. At present, the teaching places are mainly concentrated in the practice bases and campus practice bases of Taishan University, and the teaching items are mainly based on the agricultural time arrangement.

In the process of implementing curriculum reform, a teaching mechanism with the characteristics of farming and reading education should be established based on the first classroom. Based on the existing laboratory and practical platform conditions of the school, enhance students' sense of labor responsibility and cultivate good work habits. Based on actual production. Closely connecting with off campus practice bases, inviting frontline agricultural production personnel and others to serve as part-time teachers for farming and reading education, promoting agricultural university teachers to deeply participate in farming and reading education, truly enter rural areas, serve the frontline agricultural production, enhance professional practical skills, and cultivate a group of "dual teacher" teaching teams.

Taking the second classroom as the key, improve the labor education activity system of the curriculum. The second classroom is the main platform for promoting the integration of labor and innovation. Implement the second classroom practical innovation doubling education plan for college students, highlighting the training function of the innovation and entrepreneurship labor practice education base. The second classroom relies on social practice activities such as "Three Visits to the Countryside" for college students, volunteer service activities for college students, innovation and entrepreneurship training programs for college students, and innovation and entrepreneurship competitions for college students. Include the quantity and quality of student participation in activities related to the integration of labor and innovation in the second classroom assessment project, and promote students to become accustomed to the "integration of labor and innovation" model by fixing the activities that students must participate in, such as "Labor Week" and "Innovation and Entrepreneurship Experience Week". The se-

cond extracurricular class will strengthen the construction of extracurricular cultivation and reading education practice bases, relying on social resources such as agricultural science and education bases, agricultural cultural heritage sites, and national modern agricultural parks, as well as activities such as the Farmers Harvest Festival and the construction of beautiful rural areas. A number of cultivation and reading cultural education practice bases will be built, and a number of labor education brand projects will be created. Every semester, students will be arranged to conduct on-site research and on-site learning in rural areas, forest areas, and other production lines in a planned manner to enhance their sense of mission and responsibility in serving agriculture, rural areas, and farmers. Encourage students to explore innovative and entrepreneurial projects from the practical production needs of farmers, and learn how to drive farmers to become prosperous.

4.4. Reform of Course Content

Agricultural production is gradually achieving mechanization and modernization, and mechanical agriculture, digital agriculture, and smart agriculture are gradually entering the forefront of rural agricultural production. Wine is a product closely integrated with agricultural production and industry. In recent years, with the expansion of production scale and the shortage of labor, updating agricultural production technology has become a hot topic in the industry. Agricultural Internet of Things technology is an important technology in agricultural intelligence. With the development of artificial intelligence applications, many high-tech agricultural enterprises are connecting their actual production with these high-tech technologies. [15] In the content of rural skills training courses, smart agriculture is an important part of the teaching module. As the successors of agricultural production in the new era, students should possess corresponding technical and cognitive abilities after entering the workforce. Therefore, in the verification of the teaching content, the course has added some content about agricultural Internet of Things technology, such as in-depth visits to high-tech agricultural enterprises for learning. The college has established a cooperative relationship with Kebai Digital Agricultural Technology Co., Ltd. in Laiwu District, Jinan City. Through vivid lectures from enterprise mentors, students can personally visit facility cultivation orchards under the management of Internet of Things technology and learn the application of Internet of Things technology in agricultural production.

4.5. Reform of Course Assessment Methods

The reform of the curriculum cannot be separated from the reform and construction of the curriculum implementation subject. In addition to updating teaching content, it is also necessary to increase the opportunities for students to practice in teaching, mobilize their enthusiasm for agricultural management work,

and evaluate labor education elements for each student in stages and projects during each practical training project. Fully evaluate the educational elements such as labor consciousness, labor ability, and labor spirit of students.

The assessment of traditional experimental courses mainly consists of final written exams and operational exams for designated questions, with a relatively small proportion of performance during the experimental process. In the process of curriculum reform, through the revision of the outline, the proportion of process assessment in overall evaluation is increased, and the important role of students' daily performance in course grades is increased. In the 2021 version of the curriculum outline, the proportion of process assessment is 70%, which is a significant increase from the 50% in the 2019 version of the curriculum outline. The teaching teacher will give scores based on the attendance rate, proficiency in labor skills, labor time, and labor achievements of students in each practical module.

5. Conclusion

This project mainly relies on optimizing the team of course teachers, and revises the curriculum outline through the construction of a virtual teaching and research room. The first and second classrooms are the main battlefield, and a teaching method combining micro lessons and practice is established to establish a course teaching and assessment mechanism with the characteristics of farming and reading education. It strengthens students' labor spirit and consciousness, cultivates new era agricultural related college students who integrate knowledge and action, work hard, and are rooted in agriculture, rural areas, and farmers, and encourages students to participate in rural revitalization, serve and build rural areas.

Abbreviations

OIV The International Organization for Grape and Wine

Author Contributions

Zhang Lei: Conceptualization, Investigation

Zhang Ximei: Data curation

Zhou Cuixia: Writing – review & editing

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Conflicts of Interest

The authors declare no conflicts of interest.

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Research Field

Zhang Lei: Vine and viticulture, grape pest control, plant protect, plant, Utilization of plant resources

Zhang Ximei: Grape pest control, plant protect, plant, Utilization of plant resource

Zhou Cuixia: Vine and viticulture, grape pest control, plant protect, plant, Utilization of plant resources