

Exploration on Teaching Reform of Field Crop Seed Production Technology in Higher Vocational Colleges

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Abstract: The course “Field Crop Seed Production Technology” is a professional core course for the specialty of seed production and management in higher vocational colleges. This paper introduces the overall teaching design, teaching implementation process, characteristic innovation and learning effect of this course, in order to provide reference for the teaching reform of similar agricultural courses in vocational education.

Key words: Teaching overall design; Teaching implementation process; Characteristic innovation

The course “Field Crop Seed Production Technology” is a professional core course of seed production and management specialty in higher vocational colleges, with a total of 80 hours and 5.0 credits. This course actively responds to the requirements of seed industry personnel training under the background of food security strategy. Starting from the core competence of seed breeders, the school and enterprise jointly develop productive learning tasks, introduce new procedures, new technologies and new equipment for seed production, and cultivate high-quality technical and technical personnel who are “skilled in agricultural technology, entrepreneurial skills and dedication”.

1. Teaching overall design

1.1. Design “Three-step Progressive” Course Module

According to the national professional teaching standards and the professional qualification standards of seed breeders, the professional standards of seed breeders are transformed into curriculum standards, the job requirements of seed enterprises are transformed into curriculum modules, typical production projects are transformed into teaching projects, and work tasks are transformed into learning tasks. The curriculum content is connected with seed industry standards, regulations, local crops, 1+X certificates, and skill spot check standards, and the teaching process is connected with the working process, forming the idea of “four-dimensional transformation and six-docking” curriculum content reconstruction. In-depth analysis of graduates’ jobs, combined with local crops, the course is divided into three major curriculum modules: variety breeding, seed production and technical guidance, with projects and tasks under each module. The curriculum module of “three-step progressive” constitutes an organic whole according to the actual seed production process, which embodies the progressive relationship between knowledge from easy to difficult and ability from single to comprehensive.

1.2. Establish the goal of seed production core competence of “fine agricultural technology, capable production and entrepreneurial ability”

Establish curriculum teaching objectives based on professional training objectives, establish project teaching objectives based on curriculum teaching objectives. This course focuses on cultivating students’ professional ability of “fine farming technology, production and entrepreneurship” and professional quality of “dedication, emphasis on standards and strict quality” in the aspects of staging sowing, regulating flowering period, preventing impurity and preserving purity. Combined with the characteristics of seed production, comprehensive consideration of teaching content and learning situation analysis, clear the key and difficult points of teaching.

1.3. Construct the teaching strategy of “four-element collaboration + personality development + result-oriented + task-driven”

We employ the national model workers, breeding experts and technical backbone as enterprise tutors, and employ local experts and Tian Xiucui as social tutors to build a “three tutors” teaching team of school teachers, enterprise tutors and social tutors.

Relying on the school-enterprise cooperation project, based on the results-oriented education concept, taking the seed production project of seed breeder position as the carrier, following the operation procedures of seed production and ordering according to students’ cognitive rules, the teaching strategy of “four-element collaboration + personality development + results-oriented + task-driven” is constructed and implemented, as shown in Figure 6. Through teachers and tutors teaching, parents feedback supervision, the formation of teachers, enterprise tutors, social tutors, parents “four yuan collaboration” education. According to the students’ personality differentiation, the learning team is set up, and the students with leadership and organization ability and strong sense of responsibility lead the team to research and innovation; The students who are excellent in character and learning will be formed into a group to help them learn, and the activities of “one to one, many to one” will be carried out to cultivate “personality development”. Task-driven teaching method is adopted to focus on individual or team learning outcomes after completing each task, and focus on the process of outcome output and quality generation.

2. Teaching implementation process

2.1. “Three tutors, three stages, four integration, eight links” teaching implementation process

Relying on the “three tutors” teaching team, we carry out collaborative education, jointly develop curriculum standards, construct online courses, develop information teaching resources, and compile loose-leaf task sheets. Teachers in the school lead the integrated teaching of science and practice, enterprise mentors evaluate and guide the students’ achievements based on the actual production, and social

mentors teach by example and by their entrepreneurial experience.

Relying on intelligent vocational education to carry out blended teaching, expand learning time and space. Know the project progress before class, start the task, release learning materials; Class task analysis, the whole process record students learning situation; After class help develop, monitor and analyze feedback students learning effect. Carry out online interaction and communication through cloud class, Tencent conference, wechat group, etc., grasp students' learning progress and effect in time, and conduct centralized live broadcasting or individual counseling and question answering according to students' feedback on difficult questions and puzzles.

Relying on the seed Industry College, we collect cases from enterprises deeply, introduce new technologies, new methods, new standards and culture of enterprises, run productive projects through the whole teaching process, and deepen the integration of production and education. Develop virtual simulation teaching platform, seed virtual training and other information learning resources, implement online and offline synchronous classroom teaching, carry out students' technology competition, deepen the integration of learning and research; School-enterprise wisdom seed production base, student production demonstration, technological innovation, deepening research and innovation integration; Digging the ideological and political elements of professional teaching, cultivating positive outlook on life, world outlook and values throughout the whole teaching process, deepening the integration of thinking and teaching, and making every effort to create an innovative "9-in-class".

The classroom teaching is organized and implemented according to the production process. It is controlled from sowing by stages to flowering time. Based on the work process of the post, typical cases are selected, and the eight-link guiding teaching process of "project guidance -- task introduction -- rational fun learning -- team research -- achievement appreciation -- group help -- extension and extension -- feedback and supervision" is adopted. The whole class starts with "project guidance" and "task introduction", breaks through important and difficult points in "fun learning, team research and achievement appreciation", uses "extension extension learning" to consolidate students' skills and cultivate expertise, uses "team research and group help" to achieve personality development and overall improvement, and uses "feedback supervision" to improve quality, which is linked and promoted layer by layer.

2.2."Result + value added + personality" formative evaluation and continuous improvement process

Follow the basic concept of "result-oriented, student-centered and continuous improvement", stimulate students' interest in learning, cultivate students' independent learning and team research ability, and promote students' personality development. Before class, according to the analysis of learning situation, the teacher guides the research team to formulate learning objectives according to the teaching objectives and their own basis, and clarify the learning results to be achieved. Record the achievement of learning objectives, interaction, practical operation, feedback and so on throughout the class. After-school guidance and help. Establish assessment standards by connecting industry and enterprise standards, set assessment nodes, set up multiple assessment subjects composed of teachers, tutors, parents and students, design result evaluation dimensions such as time, precision and standard of students' completion results, value-added evaluation dimensions such as morality, emotion and attitude of students in the completion process, and personality evaluation dimensions such as interests, hobbies and specialties of students' personality development. A "multiple + multi-dimensional" whole-process assessment method has been established. Through analysis, teaching methods should be improved timely, students should be urged to carry out personal learning diagnosis and reform, and students' learning behaviors should be corrected regularly to ensure the achievement of learning objectives and continuous improvement of methods.

2.3.The ideological and political teaching process of "Integrating, embellishing and Evaluating" course

Adhere to moral cultivation, with the guidance of national model workers, breeding experts, Tian Xiucui and other mentors, internalize their spirit, integrate model workers spirit, Longping spirit and craftsman spirit into the classroom, infiltrate students with professional quality culture, create four dimensions of "dedication, lean, focus, innovation", rely on the four carriers of "teaching resources, classroom teaching, skill competition, production demonstration", select production cases. All-round and systematic cultivation of seed craftsman spirit has achieved the effect of cultural infiltration and silent cultivation. Taking auxiliary pollination as an example, the spirit of diligent study of model workers is carried forward in the auxiliary pollination method, and the spirit of excellence is cultivated in the 1992 application. The students strictly implement the relevant standards of auxiliary pollination, and improve the students' professional quality; The new technology of domestic UAV was selected to enhance students' national confidence and skills.

3. Implementation effect

3.1.Building smart classrooms has increased student participation

In combination with the wisdom seed production training base, seed simulation teaching platform, real-time connection and virtual simulation, the learning tasks on the seed production line are developed and the online and offline mixed teaching is implemented. Intelligent teaching expands the teaching time and space, adopts real-time production video, real-time production data, 3D animation and other information means, and adopts online wheat debate, brainstorming, simulation training and other student activities to ensure students' deep participation in task learning.

3.2.Construct job tasks and improve the degree of goal achievement

Teachers from schools, enterprises and society should meet the post ability standards of seed breeders, and set work tasks based on teaching objectives with the help of real projects. The students completed the learning task, which showed the cognitive evolution and ability transfer of the students from "knowledge - learning - research - innovation" on seed production, and achieved the effect of "learning by doing, researching in learning and innovating in research". The final examination score pass rate reached 96%, student satisfaction rate

was 98%, task completion rate was 100%. According to the requirements of the tutor and the industry standards, the students can complete the staging sowing, flowering time regulation, anti-impurity and pure protection. The accuracy of the prediction of the students' poor sowing time and flowering time has been significantly improved. The production demonstration ability and technological innovation ability have been significantly enhanced. Compared with the previous session, the achievement degree of teaching objectives has been significantly improved.

3.3. Carry out research and help study, improve the degree of personality development

Carry out research activities in a differentiated team, cultivate students' leadership, organizational ability, personality charm, and team spirit; Through one-to-one and many-to-one learning, the group gives full play to the role of example, so that students can get a sense of achievement, improve the overall class and individual learning quality, and improve the degree of personality development of students.

4. Characteristic innovation

4.1. The teaching mode of "9 classrooms, 8 learning modes and 3 teaching in one" has been constructed

Adhere to the integration of production and education, and take production projects as the carrier to create "tasks before class, rational interest in class, learning methods, education means, dialogue channels, love communication, evaluation of results, personality development, and expansion after class". Eight learning modes of "project guide, task guide, rational fun learning, team research, achievement appreciation, group help, extension extension and feedback supervision" are established, and "teachers, textbooks and teaching methods" are integrated into three teaching modes, forming a "983" teaching mode, which provides reference for the integrated teaching of science and practice.

4.2. It has realized the integration of "ideological and political education, labor and skills"

Promote model workers, soil experts and Tian Xiucui to enter the classroom, take the spirit of model workers of enterprise mentors and social mentors as the growth standard and spiritual coordinate of students, transform the spirit of "dedication, lean, focus and innovation" seed craftsman into several ideological and political points, integrate it into the skills of stage sowing, flower regulation, anti-impurity and pure protection, so that students can comprehensively improve themselves in the implementation of tasks. Effectively achieved the "dedication, standards, strict quality" of professional quality training goals. Implementation of training base "6S" management, training students to respect the quality of labor. Through cultural infiltration, in-class competition, tutor guidance, comprehensive practical training and production demonstration, the students are effectively integrated into the cultivation of craftsman spirit and innovation and entrepreneurship education, so as to promote the level of vocational ability and overall improvement of professional quality of students.

5. Concluding remarks

5.1. Continue to update the teaching content by further connecting the job standard

This course integrates the latest content in the seed field through "four-dimensional transformation and six docking", and uses modern information technology to build a deep interactive learning ecology between teachers and students, achieving ideal learning effects. However, it is necessary to constantly integrate new seed technology, new methods and new regulations into the teaching to ensure that the teaching content is updated continuously.

5.2. Further pay attention to the longitudinal growth of students and continue to carry out value-added evaluation

Teachers pay attention to the longitudinal growth of different students, explore and carry out individualized training and evaluation in the teaching process, stimulate and promote students' learning, and achieve good results. However, it is necessary to further expand the coverage of value-added evaluation, increase the evaluation parameters, adjust the grouping scheme, task setting and teaching method according to individual differences, teach students according to their aptitude, and promote the personalized development of students.

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