

Research and Practice on The Training Mode of Scientific and Technological Innovation Ability of Agricultural Engineering College Students under the Background of New Engineering Construction

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Abstract: In view of the requirements of new engineering construction, the goal of talent training is to adapt to the strategic, innovative, systematic, open and diversified modern agricultural new engineering innovation excellence under the connotation of new engineering. Start, carry out the exploration of innovation and entrepreneurship ability training mode, put forward the reform measures of student association management and competition management that are goal-oriented, plan-based, and detail-determined A good dual-innovation teaching cycle system that promotes research and competition , and forms a mature, stable, stable development, and efficient management model under the condition of multi-disciplinary cross-integration, which effectively improves students' practical innovation ability and scientific and technological competition competitiveness. To provide more feasible scientific and technological innovation mechanism and management experience for undergraduates and colleges for local colleges and universities and related educational institutions and competent departments.

1. Introduction

Under the background of new engineering construction, new requirements are put forward for the cultivation of students' innovative thinking and innovation and entrepreneurship ability. In 2017, Heilongjiang Bayi Agricultural Reclamation University successfully applied for the national education reform project "Exploration and Practice of 'Internet +' Modern Agricultural New Engineering Innovative Talents Training Model". In the process of talent training in higher education, science and technology competitions play a vital role, which cannot be replaced by conventional classrooms, and can effectively promote the improvement of teaching quality and students' comprehensive literacy. Combined with the construction goals of this project, the technology competition and the diversified ability training required by the new engineering discipline are interrelated and mutually influenced. Science and technology competition is an auxiliary for college students' classroom education that integrates the cultivation of diversified abilities, and an important carrier for the transition of students' ability to practice. Summarize the

main deficiencies in the current organization of student science and technology competitions: first, the students' professional knowledge is narrow, the competition training system is not perfect, and the competition works lack cross-disciplinary thinking; second, student competitions or individual combat, or temporary team formation, the student competition lacks systematic training and in-school management methods for information management; third, the project management mechanism of the science and technology competition is not perfect, and there are deficiencies in the students' competition driving force, echelon development, and assessment mechanism. If these three outstanding problems cannot be solved in time, it will become an obstacle for the organization of science and technology competitions to develop towards integration, interdisciplinary, close integration of engineering technology and diversified new engineering construction, and it will be difficult to meet the training goals of new engineering. To this end, it is proposed to take scientific, informatized and systematic management of science and technology competitions as breakthroughs, combined with the talent training goals of new engineering construction, from school-enterprise integration, dual classroom integration, building technology competition education platforms, and optimizing competition project management. Dimension, explore the cultivation mode of students' scientific and technological innovation ability, and cultivate new agricultural engineering talents who meet the needs of new engineering construction.

2. Analysis of Research Status

In recent years, the construction and organization of college students' science and technology competitions in my country's colleges and universities has shown an increasing trend year by year. Yang Yu put forward the possibility that science and technology competitions can cultivate innovation ability of college students who lack innovation ability [1]; Xin Mingxia proposed the strategies and approaches of college students' science and technology competition activities to cultivate students' innovation ability [2]; Xiao Yunpeng proposed specific measures to strengthen the cultivation of innovation ability [3], such as optimizing the selection and incentive mechanism, establishing innovative practice platforms and teams, cultivating college students' practical ability, and cultivating college students' theoretical research and analysis capabilities.

Foreign scholars mainly explore the positive role of science and technology competitions in cultivating students' comprehensive ability. American scholar Slize has made in-depth research on American science competitions. She believes that students must learn scientific inquiry and teamwork in science and technology competitions. As well as training and mastering skills, in addition to developing students' independent work skills in the competition as much as possible [4]. Tohn B. pointed out that students' critical thinking can be cultivated through science and technology competitions, and students can enjoy the fun of science in practice [5]. Werner et al. discussed the promotion of engineering education by robotics competitions [6]; Hahn believed that science and technology competitions promoted the development of relevant knowledge and skills of undergraduates [7]. Masters believes that innovation competitions are regarded as a means of research funding, alongside several other means of research funding such as patents, funding projects, and research contracts [8]. In addition, many universities in the United States have also formulated corresponding syllabuses related to innovative education. For example, Illinois State University in the United States clearly pointed out the implementation methods of innovative education in its syllabus. The main contents are: (1) Give students more Multiple hardware equipment support; (2) Establish reward mechanism; (3) Train students' practical ability through science and technology competitions; (4) Cultivate students' interpersonal skills; (5) Teachers should implement teaching according to students' cognitive needs. American Ph.D. John pointed out that students' brain resources should be developed with the help of scientific and technological

competitions to induce the emergence of students' creative thinking, and it is necessary to establish a creative thinking tracking mechanism and an information feedback mechanism after ability training [9]; in terms of school-enterprise cooperation, the University of Waterloo's Development experience, the school regards cooperative education as the primary way to integrate into regional economic and social development in various ways. Through integrating into regional development, a large number of educational partners have been formed, mainly including cooperative education employers and other universities. This community connection and cooperation expand the impact and influence of the University of Waterloo. The University of Waterloo has also received millions of dollars in research funding through this participation [10].

To sum up, the current researches at home and abroad mainly focus on discussing the significance and status quo of college students' science and technology competitions, the construction and management of organizations, the establishment of guarantee and incentive mechanisms, the reform of teaching models, the innovation of talent training programs, and the deepening of school-enterprise cooperation mechanisms. There is a lack of research on the combination of new engineering talent training and the organization and management of scientific and technological competitions. Under the new situation, in combination with the national talent training strategy, it has become an urgent problem to explore the organization, construction and management of scientific and technological competitions that combine school-enterprise cooperation with scientific and technological development under the premise of new engineering.

3. Research Content

3.1. Constructing the Innovative Ability Training Mode of Agricultural Engineering College Students

The training model takes the great environment of China's new engineering construction as an opportunity, takes the "Electronics Association" student science and technology association as the main research object, and focuses on the guiding and supporting role of school-enterprise cooperation in the process of interdisciplinary integration in student competitions. , under the background of the construction of new engineering, under the premise of the operation of the existing management mechanism, with the goal of cultivating strategic, innovative, systematic and open diversified modern agricultural new engineering innovative talents that adapt to the connotation of new engineering. With the aim of "promoting education through competition, promoting learning through competition, promoting research through competition, and applying competition to application", establish and adhere to the purpose of cultivating college students' innovative ability of "solid foundation, innovation leading, relying on the platform, and being brave in practice". Solid basic knowledge is a prerequisite for building innovative talent training. The association regularly conducts professional ability training, and adopts the form of "advance learning, promoting learning by application, teamwork, and joint discussion" to consolidate professional ability. On this basis, urge students to make good use of the various teaching platforms provided by the school, actively develop innovative thinking, and put new ideas, new ideas, and new methods into practice in the form of projects.

Propose and establish reform measures for student association management and competition management that are "goal-oriented, plan-based, and detail-based", and form a training plan for college students' innovation and entrepreneurship projects. The main steps include (1) basic ability training and efforts to improve innovative application ability. (2) Encourage students to define an innovative research goal with application prospects, build a research team, put forward specific research plans and plans within a specified time, and require instructors to evaluate their feasibility. In the process of project implementation, focus on the research focus, grasp the key details, and

urge the student team to complete the research content with high quality. (3) Apply for invention patents and utility model patents, publish research papers, and apply project results to participate in practical college student innovation competitions, such as intelligent agricultural equipment competitions, energy conservation and emission reduction competitions, etc., to achieve project results.

It solves the problems of narrow professional knowledge of students, lack of cross-disciplinary thinking, lack of advanced information management methods, lack of component material support for training, and unsound project management mechanism for science and technology competitions, forming an efficient and stable operation of electrical and information technology. The competition organization and implementation management mode, by promoting the cross-integration of disciplines, deepening the school-enterprise cooperation, strengthening the laboratory construction, and improving the competition organization and management system, establish a more perfect education platform, and promote the engineering practice of students based on the results. Ability training.

3.2. Four Elements to Cultivate Students' Innovative Ability and Entrepreneurial Ability

Under the urgent need of the country for the craftsman spirit of a great country, and under the torrent of new engineering construction, with the purpose of integrating value shaping, knowledge imparting and ability training, with the aim of creating a 32-year-old student science and technology association "Electronics Association" Relying on it, it has built a chain of high-quality higher education under the background of "six elements of education and double entrepreneurship" of "ideological and political leadership, two-course improvement, interdisciplinary integration, combination of teaching and competition, enterprise collaboration, and information management". The all-round "mass entrepreneurship and innovation" talent training model realizes the standardized management of the cultivation of college students' entrepreneurship and innovation practice ability under the background of new engineering. Preliminarily has the overall structure of the university's entrepreneurship and innovation education system, which enables students to have a preliminary sense of innovation and innovative theory, stimulates students' "double entrepreneurship" potential, shapes students' "double entrepreneurship" character, and initially cultivates students' "double entrepreneurship" knowledge ability.

Four elements to cultivate students' innovative ability and entrepreneurial ability The main measures are: (1) In line with the purpose of cultivating students' ability to actively learn The needs of the students' personality development, practical ability, and interpersonal skills , cooperate with the first classroom to complete all educational tasks and training objectives, build the second classroom, and build the electronic association as a collaborative linkage between the second classroom and the first classroom. Competitions, entrepreneurship competitions, publication of papers, patent applications, etc. will assess the academic performance of the second class, and objectively record and strictly inspect the results of the second class, and convert them into innovative practice credits. To mobilize the enthusiasm and autonomy of students to learn, so that students can gradually master professional knowledge and skills, and at the same time cultivate students' creative thinking and engineering ability. (2) Highlight the students as the main body, increase the connotation construction of teachers, and use the "Internet +" college student innovation and entrepreneurship competition, "Challenge Cup" college student science and technology competition, China Innovation and Entrepreneurship Competition, etc. The competition rules, task design, evaluation standards and other elements of the level skills competition, refine its core knowledge points, skill requirements, and professional standards and gradually integrate them into the professional core courses and teaching assessment standards. Lay a good foundation for

"double innovation", realize cross-disciplinary, cross-professional and cross-grade exchanges and cooperation, cultivate students' cross-border integration ability, enhance the integrity and quality of works and engineering projects, and improve the application level of comprehensive technology. (3) Strengthen the internal driving force of students' entrepreneurship and innovation, compile and form outstanding "mass entrepreneurship and innovation" alumni growth deeds, practice successful cases around them, drive more college students to participate in "mass entrepreneurship and innovation", vigorously promote school-enterprise cooperation, and actively recommend and connect outstanding students' "mass entrepreneurship and innovation" projects to enterprises, so that student competitions can be targeted, "talents/materials" are available, financial support is provided, and fruits can be "picked". Strengthen the compatibility of students' "mass entrepreneurship and innovation" ability with regional social and economic development. (4) Developed a scientific and technological innovation community platform management system, which integrates the functions of competition registration, information release, result query, competition work display, data management, user management, competition management and data management, and solves the problems in the process of entrepreneurship and innovation training management. The efficiency of manual management is low, cumbersome and error-prone. At the same time, the electronic display of the competition works on the platform and the physical display of the laboratory form a diversified display effect, which is not only for students to learn, but also breaks through the geographical and time constraints of the physical display form, and realizes dual entrepreneurship and innovation. Networked and standardized management improves the management efficiency of entrepreneurship and innovation education.

3.2.1. Research Object

Focusing on the training goals of intelligent agricultural equipment and agricultural informatization for new engineering talents, in order to meet the needs of agricultural machinery equipment improvement and industrial upgrading in Heilongjiang Province, combined with the needs of China's promotion of "Internet +" modern agricultural construction for the cultivation of innovative talents, our college students science and technology competition The activity is also closely centered on the training and construction of new engineering talents, taking the two directions of agricultural equipment intelligence and agricultural informatization as the starting point, and taking the "Electronic Association" science and technology community as the implementation object, combined with the new engineering construction goals, to carry out innovation and entrepreneurship capabilities and comprehensive practice. Ability training. "Electronics Association" is an old-fashioned science and technology association founded in 1987. It currently covers 5 majors and four students. It is the earliest student association of Heilongjiang Bayi Agricultural University. The total number of students participating in the club is 176, and there are 24 instructors. The student-teacher ratio is 5.67: 1, including 4 with senior titles, 10 with deputy senior titles, and 10 with intermediate titles. At this stage, the main national competitions include: National College Student Electronic Design Competition, "Dongfanghong" Cup National College Student Intelligent Agricultural Equipment Innovation Competition, National ICAN Innovation and Entrepreneurship Competition, Freescale Cup National College Student Smart Car Competition, "Challenge Cup" College Student Extracurricular Competition Academic Science and Technology Works Competition, National "Internet +" College Student Innovation and Entrepreneurship Competition, China "Chuangyi" Entrepreneurship and Innovation Competition, National College Student Energy Conservation and Emission Reduction Social Practice and Technology Competition, National "TRIZ" Cup College Student Innovation Method Competition, "Blue Bridge Cup" National Software and Information Technology Professional Talent Competition, "Mitsubishi" Motor Cup Competition, National College Student Optoelectronics Competition, "Siemens" Cup

China Smart Manufacturing Challenge. Through the joint efforts of teachers and students for several years, the "Electronic Association" students have been cultivated into outstanding agricultural engineering undergraduates with pioneering and innovative spirit, tenacity and perseverance, outstanding professional ability, and not afraid of difficulties.

3.2.2. The Combination of Dual Classrooms Broadens the Teaching Methods of Innovation and Entrepreneurship Education

The first class takes the simple control system as the main line, constitutes the innovative practice curriculum system, and aims at cultivating innovative and entrepreneurial thinking and ability, and runs through the whole process of curriculum education. Specific courses include electronic technology (analog electricity, digital electricity), sensor principle and application, single chip principle and application, automatic control system, etc. It covers information sensing and acquisition, signal conditioning, controller and control functions of automatic control systems. In the course of the course teaching, combined with the research direction of the teachers, 5 projects are arranged, namely: the completion of the design, the production, and the successful debugging of 2-3 projects. The content of the project involves 1-3 projects of pioneering and innovative thinking, 3 projects to solve specific engineering practical problems, and 2 projects for students to discuss independently. In the course of the course, students are required to develop innovative awareness, cultivate innovative practical ability as the starting point, take the project as the driving force, practice as the method, strengthen team building, carry out plan design, discuss the rationality of the plan, strengthen communication skills, and use engineering design proficiently tool. Form basic applied technical skills and initially form innovative thinking.

The second classroom is set up for the activities of the student science and technology community. The club recruits new members every semester, and the training of club members covers three aspects. The first is to carry out regular innovation and entrepreneurship training to consolidate students' innovative and entrepreneurial skills, involving: electronic circuit design and debugging, college students' scientific thesis writing, creative competition project topic selection and application writing skills, and entrepreneurial project preparation and implementation process. Second, on the basis of college students' innovation and entrepreneurship skills training, group members are divided into teams, innovative seminars are held, and college students' innovation and entrepreneurship projects are cultivated. It is a competition entry, using the Daiso project to support the student competition and ensure that all members participate in the Daiso project.

Strengthen the integration of the first classroom and the second classroom, meet the diverse needs of students, and strengthen student services and guidance. Improve the comprehensive assessment and management method of student quality, establish a work system of "four-round education", strengthen the mutual integration of professional teachers and community instructors; improve the guarantee mechanism, strengthen the organic connection between the second classroom and the first classroom content, and encourage teachers and students to participate Second Classroom Activities; Pilot the Second Classroom Transcript System. Teachers of the research group participate in innovation seminars to discuss the feasibility of students' self-designed innovation projects; students' research project results apply for innovation and entrepreneurship projects, and participate in relevant national professional competitions. Coordinate the resources of teachers and students, according to the research direction of teachers, combined with the characteristics of the student team, rotate instructors, and promote students to understand and master the cutting-edge dynamics of various disciplines. Rongdian 15, 16, and 17 Zhuo Chuang classes are all included in the "Electronic Association", adopting a parallel model to organically combine science and technology competitions with students' classroom learning, and conduct them at the same time. For courses closely related to practice, such as single-chip microcomputer

principle and application, sensor principle and application, programmable logic controller, automatic control principle, etc., it is combined with the carrier object of project implementation and based on specific engineering projects. With students as the main body and teachers' guidance as the auxiliary, the practical project of the competition has completed the design, production and debugging of the competition works. Currently, 17 design works have been completed. Driven by solving the project goals, it advocates students to study with problems, strengthens the connection between courses, the organic connection between the first classroom and the second classroom, solves problems such as poor ability to link theory with practice, lack of innovative thinking, etc., to stimulate students' learning. Source power, strengthen the mutual integration of professional teachers and community instructors, and explore and provide talent reserves for our college students' science and technology competitions.

3.2.3. Carry out in-depth School-Enterprise Cooperation, Build a School-Enterprise Linkage Platform and Linkage Mechanism, and Achieve a Triple Win for Schools, Enterprises and Students

School-enterprise cooperation is beneficial for students to integrate multi-disciplinary knowledge and form a more comprehensive and open and reasonable knowledge structure. The process of building an education platform between associations and enterprises mainly includes the following links: selecting cooperative enterprises, building an order-based training framework, and formulating joint training plans; jointly improving laboratory construction and highlighting the management role of the school. Under the innovation and entrepreneurship experimental platform that the existing competition relies on, the enterprise will fund the construction and operation funds of some laboratories; strengthen the guiding and supporting role of the enterprise in talent training, including providing: enterprise production problems, raw materials, experimental equipment, competition funds, technical training, and achievement transformation. Make student competitions have a definite purpose, "talents/materials" are available, there is fee support, and there are fruits that can be "picked". The school provides talent protection for enterprises. According to the school-enterprise joint training plan, the student competition program closely follows the frontiers of industry technical skills development and the talent needs of industry enterprises. The number of students participating in the competition is maintained at 30-40 person-times each year. The training process is: Understand the technical needs of enterprises - Complete project works - - Participate in science and technology competitions - Transformation of technological achievements. In addition, in the school-enterprise joint training model, students can go to enterprises for internships and work in enterprises after graduation. The school-enterprise cooperation model adheres to the concept of coming from the enterprise to the enterprise, understands the technical needs and talent needs of the enterprise, solves the technical bottleneck for the enterprise, and then forms the students' project works into characteristic products to create economic value. In the learning stage, a progressive talent training and selection model is formed, and a talent echelon composed of students of all grades is formed. Student training is seamlessly connected with the needs of enterprises, providing talent guarantee for enterprises. In addition, enterprises can name and support students to participate in science and technology competitions, thereby expanding the company's reputation and influence, attracting high-level colleges and universities with similar majors, and solving the enterprise's employment needs. School-enterprise cooperation, and enterprises sponsor students to participate in the competition. The "Electronics Association" managed by the host has currently carried out preliminary cooperation with Guoxin Blue bridge Education Technology (Beijing) Co., Ltd. and Daqing Mingdawell Information System Service Co., Ltd., and the two companies respectively sponsor the students of the association to participate in the "Ninth Blue Bridge". Bridge Cup National Software and Information Technology Professional Talent Competition "National

Competition" and "Dongfanghong" Cup 3rd National College Students Intelligent Agricultural Equipment Innovation Competition" two national-level science and technology competitions. In 2017, the "Dongfanghong" Cup won 11 awards, "Blue Bridge Cup" won 1 national first prize, 22 third prizes, and 1 winning prize. In 2018, it won the second national prize of "Energy Conservation and Emission Reduction".

Through school-enterprise joint training, the preliminarily solves the practical problem of the widely existing classical theoretical education in higher education and the needs of modern manufacturing, information industry, and Internet + industry, and solves the contradictions between enterprises, universities, and students. To seek common interests and promote the maximization of interests, that is, enterprises provide platforms and resources, associations provide human resources, schools provide environmental protection, enable students to start businesses and find jobs, enterprises cultivate personalized talents in advance, and improve school reputation and employment rate, etc. three goals. Meet the needs of new engineering construction in contemporary higher education.

(1) Platform of the Virtual Experiment Center of Modern Agriculture

The provincial virtual experiment center is open to the students of the association. Through the collection, display and analysis of the actual production data, the laboratory has realized the simulation and display of the modern large-scale agricultural production process with a virtual system. Provides experimental teaching resources such as water-saving irrigation of rice in cold regions, mechanization of rice production in cold regions, 360-degree holographic images, etc., including: comprehensive experiments of single-chip microcomputer for environmental monitoring of agricultural facilities, comprehensive experiments of PLC for full-process monitoring of rice soaking, germination and seedling raising , and mechanization of rice production throughout the process Comprehensive experiment of industrial computer. The laboratory is open to students, which improves students' learning enthusiasm, innovative spirit and practical ability, and provides a good way to solve the high-energy, high-consumption, high-pollution and high-risk competition project experiments.

(2) Provincial Experimental Center Platform for Electrical and Electronic Experiments

The provincial-level electrical and electronic experimental center is open to the students of the association. The laboratory is a provincial-level experimental teaching center that guarantees the experimental teaching tasks of multi-disciplinary, multi-professional and multi-level students. The open experiment of the experimental center is combined with the series of activities of the "Electronics Association" of our university students. The main participants are members of the association and lower-grade students. The instructor and the backbone of the association jointly formulate detailed implementation rules and rich training content to inspire and maintain the enthusiasm of college students to participate in electronic design, master the use of conventional instruments, provide basic equipment support for student competitions, and provide a simulation system design ability training platform for college students' electronic design competitions.

(3) Open Innovation and Entrepreneurship Laboratory

Open to all students the mechanical simulation platform for the whole process of rice production, electronic comprehensive training laboratory, PLC laboratory, etc., with a total of 44 5.76 square meters, providing the whole process of rice production mechanical simulation test, PLC test bench, digital oscilloscope, multi-function power supply , signal transmitter, analog oscilloscope, various types of sensors, DSP , FPGA and other instruments and equipment 97 sets, using CDIO operation management mode to manage, set conception (Conceive), design (Design), implementation (Implement) and operation (Operate) in one. It provides a learning place and a debugging site for competition works for the students of the association. Through practice, students can further deepen their understanding of theoretical knowledge, and at the same time, they can cultivate students'

innovative ability and practical ability, and accumulate experience for scientific and technological competitions.

(4) Establish an Information Management System for Scientific and Technological Associations and Change the Traditional Management Methods.

The online discipline competition management system is developed with the help of information technology [11]. The management system integrates the functions of competition registration, information release, result query, competition work display, data management, user management, competition management and data management to realize the whole process management of competition. Develop a competition management platform. It has changed the traditional way of competition publicity and organization, and improved work efficiency. Solve the problem of low efficiency of offline manual management in the whole process of competition management, cumbersome and error-prone. At the same time, the electronic display of competition works on the platform and the physical display of the laboratory form a diverse display effect, which is not only for students to learn, but also breaks through the geographical and time constraints of physical display.

(5) Strengthen the Internal Driving Force of The Competition.

School-enterprise cooperation to educate people, strengthen the construction of the guidance teacher team, and improve the training content of college students' competition activities. Combined with the needs of social innovation talents, jointly reform the training and practice content, make up for the shortcomings of only unilateral training and guidance of competition works by instructors, and fully absorb the opinions and suggestions from engineering and technical personnel with different perspectives and rich practical experience. The training content is more in line with the needs of cultivating new engineering talents. Formulate, compile and form a growth story book of outstanding "mass entrepreneurship and innovation" alumni, and use the successful cases around them to drive more college students to participate in "mass entrepreneurship and innovation", and vigorously promote school-enterprise cooperation. Build a team of instructors. Arrange instructors to study in the enterprise, participate in practical work such as production, design, research and development, and management of the enterprise, cultivate and improve engineering practice ability, engineering design and development ability and engineering technology innovation ability, and build guidance composed of instructors and professional and technical personnel of the enterprise. Teachers. Implement a double-teacher system to jointly guide practical projects and scientific and technological competition works. Under the guidance of the dual tutors, the topics of the science and technology competition can be derived from the actual production of the enterprise, which is a technical problem that the enterprise urgently needs to solve. Student entries can be selected from real-world projects that the business is currently working on or a practical problem that the business needs to solve. Introduce a sense of crisis and form a competition selection system. Form the daily organization and management system of the competition students, such as the daily organization and management system and the safety management system; divide the competition direction, build a scientific research team of college students, inherit the learning form of passing, helping, and leading, and organize regular seminars and reports for each team; regularly organize scientific and technological competition training, establish an assessment mechanism, the student assessment adopts a reward mechanism and an elimination system; establish a teacher assessment mechanism.

Through training and seminars and various academic exchanges and teacher-student interaction, the knowledge scope and practical ability will be expanded, and the limitations of narrow professional knowledge and imperfect curriculum system will be broken. Build a scientific research team of college students, use echelon construction to cultivate team spirit, avoid temporary team formation, utilitarian competition in haste, and form the effect of passing, helping, and leading. In

this way, the problems of poor foundation of students and slow improvement of practical ability are solved.

4. Cultivation Effect

The main effect of the training model: the goal of dual-creation education is highly consistent with the training goal of new engineering. Preliminarily has the overall structure of the university's entrepreneurship and innovation education system, which enables students to have a preliminary sense of innovation and innovative theory, stimulates students' "double entrepreneurship" potential, shapes students' "double entrepreneurship" character, and initially cultivates students' "double entrepreneurship" knowledge ability. It realizes the personalized and comprehensive training of college students, and effectively improves the quality of training talents for innovation and entrepreneurship, so that they have the spirit of innovation, innovative thinking, and entrepreneurial awareness to meet the needs of intelligent manufacturing of agricultural machinery and equipment, modern agricultural machinery and equipment operations, and agricultural production processes. Modern agricultural intelligence to meet the needs of industrialized development, with good scientific and humanistic quality, solid professional knowledge and skills, strong engineering innovation quality and practical ability, innovative and entrepreneurial spirit and willing to serve local economic development. After 6 years of exploration and stable operation, a stable 15-person dual-creation teacher team composed of multiple majors has been formed, and 1 double-qualified teacher has been cultivated. Cultivated, applied for and approved the first innovation and entrepreneurship project for college students at all levels, registered the first enterprise, and won the first prize in various competitions. From 2017 to 2021, club students won 12 national competition awards, including 2 first prizes, 1 second prize, and 9 third prizes; 28 provincial awards, including 4 first prizes. There are 10 second prizes and 14 third prizes, with a total of 120 awards, a total of 42 innovation and entrepreneurship projects have been guided for college students, and a total of 104 provincial - level competition awards have been awarded. Students have won more than 100 awards in various national, regional and provincial competitions. The association has trained and exempted 7 graduate students, and has been approved for more than 80 large-scale innovation projects at all levels. More than 30 scientific research papers have been published, and the employment rate is 100%. In the "Dongfanghong" intelligent agricultural equipment competition, it won 2 national first prizes, 1 second prize and 8 third prizes.

The four-element education and dual-creation model realizes deep-level, multi-stage, multi-channel, whole-process, and all-round collaborative innovation education, promotes the organic connection between the education chain, innovation chain, talent chain and industrial chain of agricultural colleges and universities, and can effectively cultivate adaptability Modern new engineering needs to cultivate applied and compound talents.

5. Conclusion

1. The competition and teaching are organically combined. Through the technological, practical and exploratory characteristics of science and technology competitions, students are encouraged to learn basic courses more solidly, combining theory and practice, emphasizing the cultivation of students' engineering quality, and strengthening modern information. Technology plays an auxiliary role in the competition. Under the research of this topic, a mature, stable, stable development, and efficient management model is formed under the condition of multi-disciplinary cross-integration, which promotes students to improve their practical innovation ability and scientific and technological competition competitiveness. This model enables students to have analytical skills, practical skills, creativity, communication skills, leadership skills, rapid problem solving skills,

lifelong learning skills, effective time management skills, self-confidence, written and oral communication skills, personal responsibility, design and The improvement and leap of production ability, so as to realize the leap-forward development of innovative thinking training - creative ability practice - entrepreneurship realization.

2. Through the joint training of schools and enterprises and the formation of related associations, interdisciplinary cross and integration are realized.

(1) The results of this research can realize interdisciplinary integration, resource coordination and sharing, cultivate electrical and information students to see things from multiple perspectives, and cultivate students' interdisciplinary integration ability.

(2) The training mode is suitable for similar universities that are cultivating future diversified, innovative and excellent engineering talent training models through college students' science and technology competitions under the background of implementing new engineering disciplines.

(3) Research results can enrich the meaning, value and connotation of science and technology competitions, straighten out the relationship between science and technology competitions and training objectives, and promote the sound development of science and technology competitions.

The exploration and implementation of the organization and management mode of scientific and technological competitions is conducive to improving the scientific research ability and scientific and technological innovation ability of local undergraduates. It can provide more feasible undergraduate scientific and technological innovation mechanism and management experience for local colleges and universities and related educational institutions and competent departments.

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