Discussion on the Path of Integration of Industry and Education to Serve Rural Revitalization: Take Sihe Village in Qingyuan City as an Example

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Abstract: This paper takes Sihe Village in Qingyuan City as an example to explore the effective path of integration of industry and education to serve rural revitalization. Through data collection and field research, the successful practice and practical challenges of the integration of industry and education in rural revitalization are analyzed in depth. The path design of introducing water and fertilizer irrigation integration technology, high-speed transplanter technology, improving the construction of photovoltaic power generation shed and strengthening the construction of water conservancy facilities were put forward. The results not only provide useful suggestions for the integration of industry and education in Sihe Village of Qingyuan City to serve rural revitalization, but also provide reference for other rural integration of industry and education to promote rural revitalization and development.

Keywords: Integration of industry and education; Rural revitalization; Integration of water; Fertilizer and irrigation; High-speed transplanter

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1. Introduction

In February 2023, the Central Committee of the Communist Party of China and the State Council issued the Opinions on the Key Work of Promoting Rural Revitalization in an All-round Way in 2023, which clearly called for the vigorous development of vocational education for rural revitalization, and emphasized the importance of deepening the integration of industry and education and school-enterprise cooperation [1] . The integration of industry and education plays a vital role in rural revitalization, which not only brings advanced technology and management experience to the countryside, but also injects new vitality into the local economic and social development. Their relationship is multi-level and dynamic. In the past, rural development mainly relied on the traditional agricultural model, with slow technological updates and lack of educational resources. With the increasingly close cooperation between vocational education and industry, the integration of industry and education has provided important support for the overall revitalization and development of rural areas in terms of personnel training, scientific and technological innovation, multi-party linkage and comprehensive cooperation. When exploring the path of rural revitalization, the integration of industry and education is a strategy with great potential. With the continuous progress of technology and the further sinking of educational resources, the integration of industry and education will play a role in more fields. In view of the future development trend, we should continue to deepen the

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integration of industry and education, and play a more critical role in rural revitalization, so as to further improve its ability to serve the society, cultivate more talents with high-quality skills, and contribute to the rural revitalization of the region [2] .

2. The Role of Integration of Industry and Education in Rural Revitalization

Industry-education integration is not only a simple combination of industry and education, but also a deep and all-round synergistic effect, which is the docking of educational resources and industrial needs, as well as the organic combination of personnel training and industrial development. Through technology transfer, personnel training, multi-party linkage and comprehensive cooperation and industrial upgrading, it will promote the development of rural economy and enhance the comprehensive competitiveness of rural areas.

(1) Technology transfer. As the core part of the integration of industry and education, technology transfer is to transform the scientific research achievements of universities and scientific research institutions into practical applications of industry through in-depth cooperation between industry and education, so as to effectively promote technological innovation and industrial upgrading, thus providing new momentum for regional economic development.

(2) Personnel training. As an important pillar of the integration of industry and education, through the establishment of close cooperation between universities, industry and local governments, we should actively carry out the integration of industry and education under the strategic background of rural revitalization. Find a breakthrough [3] in innovating the training of new-type vocational farmers, training "people who understand agricultural science and technology", "leaders who get rich" and "guides who revitalize the countryside", jointly promote personnel training and scientific and technological innovation, provide technical consultation, achievement transformation, personnel training and other services for the countryside, and promote the sustainable development of rural economy.

(3) Multi-party linkage and comprehensive cooperation. The school integrates the existing specialties into the strategy of rural revitalization, cooperates with enterprises and institutions, and promotes rural revitalization with the teaching system of integration of industry and education. This kind of cooperation helps to pool professional competence and establish and improve the school-running mechanism of school-enterprise cooperation.

(4) Industrial upgrading. As an important goal of the integration of industry and education, industrial upgrading is the key and foundation of rural revitalization, which can provide stronger economic support and more employment opportunities for rural revitalization, while rural revitalization provides a broad space and market for industrial upgrading. Through the integration of industry and education, we can effectively promote the coordinated development of the two.

3. Analysis of the Current Situation of Sihe Village in Qingyuan City

(1) Basic information of Sihe Village

Sihe Village is located in the west of Longtang Town, Qingcheng District, Qingyuan City, Guangdong Province, and is adjacent to Henghe in the north. It has jurisdiction over 12 villager groups with a total area of 7.6 square kilometers, a registered population of 3900, an area of 5000 mu of arable land and an area of 500 mu of freshwater aquaculture. As a farmland protection area [4] , Sihe Village is suitable for agricultural development, and the villagers mainly grow rice, vegetables and fruits for a living.

At present, Sihe Village is carrying out the construction project of paddy field reclamation, which mainly includes

land leveling project, soil improvement project, irrigation and drainage project, field road project, farmland protection and ecological environment conservation project and other projects, turning cultivated land into "drought irrigation, waterlogging drainage" fields, and making scattered and uneven fields. Field roads and farmland shelterbelts form a network, thus improving the utilization rate of cultivated land and increasing the output rate of cultivated land. After the implementation of the project, it is estimated that the annual income of crops will be about 700000 yuan, which will produce significant direct economic benefits.

(2) Challenges of Sihe Village in rural revitalization

Through field research and visits, the challenges faced by Sihe Village in Rural Revitalization mainly include the following aspects:

1) Modern agricultural technology is backward. Villagers mainly rely on traditional manual farming methods, lacking the support of mechanized equipment and precision agricultural technology. Poor technology leads to inefficient production, inconsistent crop yields, and vulnerability to weather and pest damage. In addition, the cultural level of farmers is not high, and their ability to accept new knowledge and technology is weak, which seriously affects the growth of local agricultural economy. The combined effect of the above factors makes the agricultural development of Sihe Village slow and difficult to meet the development needs of modern agriculture.

2) Shortage of talents. Most of the young people in the village choose to go out to work, and most of the people who stay in the village are the elderly and children. This population structure leads to the lack of fresh blood and technical support in agricultural production, which not only affects the renewal of agricultural technology, but also limits the implementation of new agricultural projects.

3) Agricultural infrastructure is weak. Although the government has increased investment in rural infrastructure in recent years, Sihe Village's water conservancy facilities are still relatively backward, the village's irrigation system is aging seriously, and the use of water resources is inefficient, resulting in unstable crop yields. Although projects such as high-standard farmland renovation and leisure park construction are under way, they still need continuous investment to improve the quality of life and agricultural production conditions of villagers.

4) Project landing is difficult. Rural revitalization projects may encounter difficulties in land use, funds and policy support in the process of landing. For example, Sihe Village applied to the Agricultural and Rural Bureau for a rural revitalization fund of 650000 yuan to purchase a number of modern farming equipment, such as high-speed transplanters and crawler tractors, on the occasion of the "high-quality development project of hundreds of counties, thousands of towns and thousands of villages". But there may still be challenges in practice.

4. Discussion on the Path of Integration of Industry and Education in Sihe Village

(1) Introduction of integrated technology of water and fertilizer irrigation into

In the process of water conservancy construction, in cooperation with relevant agricultural technical colleges, expert teams were invited to analyze the soil and crops in Sihe Village, and the integrated technology of water and fertilizer irrigation was introduced into the integrated cultivated land. Intelligent sensors were used to monitor key indicators such as soil humidity and temperature in real time, and the amount and time of irrigation were accurately adjusted through automatic control system. At the same time, a remote monitoring platform is established to control and operate the irrigation situation of farmland in real time, so as to improve the management efficiency of farmland and crop yield.

Specific implementation directions:

1) Install intelligent irrigation system, including sensors, controllers, solenoid valves and other equipment, to

achieve precise irrigation.

2) Establish an irrigation management platform to monitor soil moisture, temperature, rainfall and other data in real time, and automatically adjust the irrigation plan according to the data.

3) Provide intelligent irrigation technology training and technical guidance to villagers, so that they can master technical skills skillfully, so as to improve the actual operation and management level.

4) In order to gain the villagers' trust in the new technology, establish a demonstration field, so that the villagers can really see the actual effect of the new technology, so as to rapidly promote the technology in the village.

(2) Improve the construction of photovoltaic power generation shed

At present, Sihe Village has built a photovoltaic power generation shed, which is a successful case of integration of industry and education in rural revitalization, with a monthly income of about 4000 yuan, bringing significant economic benefits to the village collective. As an innovative technology, the construction of photovoltaic power generation shed is a dynamic process, facing many challenges, and should be continuously improved, including the rapid updating of technology and later maintenance, which requires a lot of manpower and financial resources. Therefore, it is suggested that the government and relevant departments should increase their support for new energy projects in rural areas, and help more rural areas achieve green development through policy support and financial subsidies.

(3) Introduction of high-speed rice transplanter technology

High-speed rice transplanter is a kind of agricultural machinery used for rice planting, which can transplant rice seedlings with high speed and efficiency. With the completion of the paddy field reclamation project in Sihe Village, the flat field, suitable water depth and appropriate soil moisture content have created favorable conditions for the introduction of high-speed transplanter. However, the high-speed rice transplanter has complex structure and high technical content, involving a number of core key technologies, and the villagers lack relevant technical training and practical experience, which makes it difficult to promote the technology.

In this regard, the following specific measures and strategies are adopted through the mode of integration of industry and education:

1) Give full play to the guiding role of agricultural technology village officials in rural revitalization: the government, schools, enterprises and other parties cooperate to send professional counterpart agricultural technology village officials to provide professional technical guidance. Through WeChat and answering questions, centralized training, sending technology to the countryside and other forms [5] , villagers can grasp the relevant technology and skilled operation in time, and promote the application of agricultural technology such as high-speed transplanter.

2) Personnel training: Cooperate with higher vocational colleges, use the modern apprenticeship model, and jointly revise the personnel training program to ensure that students can master the operation and maintenance skills of modern agricultural machinery such as high-speed transplanters.

3) Technical training: organize students or relevant technical teams to carry out technical training to improve the ability of employees of agricultural enterprises in modern production, mechanized application and digital management of high-speed transplanters.

4) Demonstration and guidance: Demonstrate the actual effect of agricultural machinery such as high-speed transplanter through demonstration projects, and guide farmers to accept and use new technologies.

Through these measures, the modern agricultural technology of high-speed transplanter can better serve the countryside, improve the efficiency of agricultural production and promote rural revitalization.

(4) To strengthen the construction of water conservancy facilities

At present, Sihe Village is investing heavily in the construction of water conservancy facilities. Through measures such as talent and technical assistance, policy support and resource integration, the project landing will be accelerated and the construction of water conservancy facilities will be completed.

1) Establish a training practice base: jointly establish a training practice base with higher vocational colleges, strengthen the training of professional skilled personnel, improve the employment rate of graduates, and provide professional support for the water conservancy construction of Sihe Village.

2) Industry-education integration and school-enterprise cooperation: the village committee and the Party branch of the secondary college jointly build the work to promote the integration of industry and education. The school dispatches a team of teachers and students majoring in water conservancy engineering to conduct a comprehensive evaluation and design of the water conservancy facilities in Sihe Village. In this way, the school can strengthen the connection with the village and jointly train water conservancy construction talents.

3) Integration of resources: Through the platform of Guangdong Vocational Education City (Qingyuan) Industry-Education Integration Research Institute, Vocational Education City Science and Technology Achievement Transformation Center and other institutions, integrate resources such as personnel training, technology research and development, skills training, expert think tanks, innovation and entrepreneurship, and cooperate with local governments, industrial parks and industry enterprises in depth. To provide all-round support for water conservancy construction in Sihe Village.

Through the above measures, the integration of industry and education will be effectively applied to the construction of water conservancy facilities in Sihe Village.

5. Conclusion

According to the local conditions of Sihe Village in Qingyuan City, this paper puts forward the path of integration of industry and education in the service of rural revitalization, such as the introduction of water and fertilizer irrigation integration, high-speed transplanter and other technologies, which can not only bring innovation in local agricultural technology, but also stimulate the endogenous power of the countryside, so as to realize its own revitalization and development.

At the same time, the deepening of the integration of industry and education in rural areas is also facing many challenges, such as the sustainable application of technology, the improvement of farmers'technical level, and the establishment of a long-term cooperation mechanism. To this end, we should start from the following aspects:

Supply of scientific and technological services: promote the integration of industry and education and cooperation between schools and localities, set up technical service teams for teachers and students in vocational colleges, provide technical services and guidance for rural enterprises and farmers, help farmers better master new technologies and improve their application effects.

Establish a diversified cooperation model to attract more social capital and resources into the countryside. Rural revitalization can be jointly promoted through the tripartite cooperation mode of government guidance, enterprise participation and university support.

Pay attention to the localization of technology to make it meet the actual needs of the local. Each village has its own unique geographical environment and cultural background, and the introduction and application of technology must be tailored to local conditions in order to maximize its effectiveness.

Establish a sound evaluation and feedback mechanism, and timely adjust and optimize the implementation path

of the integration of industry and education. Through regular evaluation and feedback, we can find problems in time, adjust strategies, and ensure the continuous promotion of the integration of industry and education.

The integration of industry and education plays an important role in serving the strategy of rural revitalization and is influenced by multiple dimensions. Its path is complex and diverse, and opportunities and challenges coexist. Local governments should deepen the integration of industry and education according to actual needs and make positive contributions to the local rural revitalization.

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