

The Theoretical Logic and Implementation Path of Applied Undergraduate Colleges Serving Rural Revitalization

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Abstract: As the rural revitalization strategy continues to evolve, higher education is gaining importance. However, existing literature lacks systematic analytical framework and practical implementation paths. Applications of applied undergraduate colleges and universities are used as the object of this work, using theories of educational function, human capital and triple helix to explain internal logic and mechanism of their service to rural revitalization. Based on domestic and international practical experiences, a capability evaluation index system of four dimensions: talent services, technical support, resource integration and service effectiveness has been proposed. Different implementation paths were proposed for three scenarios: industry, talent, culture, and ecology. A long term mechanism of rights and responsibilities, resource sharing, risk sharing, and incentive assessment has been developed. Results can provide theoretical references and practical guidance to applied undergraduate colleges to meet rural needs of applied undergraduate colleges. This research results can provide theoretical references and practical guidance for applied undergraduate colleges to adapt the short term project-based assistance to long term stable model.

Keywords: Application-Oriented Undergraduate; Colleges Rural Revitalization; University-Local Cooperation; Service Path; Long-Term Mechanism

1. Introduction

With the progress of the rural revitalization strategy, the functional value of higher education in empowering rural development has increased. Application-oriented undergraduate colleges perform functions such as Talent cultivation, scientific and technological innovation, social services [1]. Their local position makes them the

carriers of higher education resources for fulfilling the demands of rural development. At the national level, it is necessary that application-oriented universities optimize their services on the actual development of regions focusing on areas such as the cultivation of county-level characteristic industries, the formation of grassroots talent teams and the inheritance of rural culture. This orientation is a policy direction for how application-oriented undergraduate colleges can play in rural revitalization. Practical demands: The current rural development is facing problems such as technical talents shortage and difficulty of transforming ecological and cultural resources, which require the injection of talents and intellectual resources from universities. Universities can offer conditions such as disciplinary directions, talent supply, practical co-construction that are directly relevant to the actual needs of rural development [2].

The problem in the present state is that many of the problems with the use of universities to help rural revitalization have been gradually replaced by a summary of macro experience and focused on specific mechanisms and theories. Models have been explored with different focus according to the different characteristics of application-oriented, private and ethnic minority area universities. Problems: Most common problems are that assistance work is a mere formal work, that the conversion rate of scientific work is not high, that talent cultivation is not connected to the needs of rural areas, and there is not a long-term and effective evaluation mechanism. Overall, the present work is still more on the unilateral output of universities. There is not much discussion on how to achieve two-way interaction between universities and local areas and how to integrate new productive forces into it.

The present work does not provide a systematic theoretical analysis framework, and has not yet given concrete implementation paths that can be executed for different real situations and guarantees

that can be run long term. We start from why application-oriented undergraduate colleges can serve rural revitalization and their operation logic, and focus on the basic issues such as capacity evaluation, scenario paths and long-term mechanisms. In addition to these theoretical references and practical suggestions applied application-oriented undergraduate colleges can more accurately serve the actual needs of rural revitalization.

2. The Theoretical Basis and Mechanism of Action of Applied Undergraduate Colleges in Serving Rural Revitalization

Application-oriented undergraduate colleges have three basic functions: talent cultivation, social services and cultural inheritance. They take serving regional development as their educational orientation and emphasize application orientation. This allows them to break the research universities single dependence on academic output and align educational resources to real needs of rural development. By cultivating professional talents in a targeted way and transform applied technological achievements, they directly promote the most important link of rural development. Human capital theory also points out that human resources are the main driving force of rural development. At present, the main bottleneck of rural revitalization is the lack of human capital, especially grassroots compound talents with professional qualities and practical abilities, which makes it hard to meet the demand for varied talents of modernization of rural governance [3]. Triple helix theory provides an analytical framework for the collaborative participation of universities and local authorities in rural revitalization. Through shared sharing of resources and complementary advantages between three types of entities - universities, government, industries - the original boundary can be broken down, creating a new ecosystem with multiplier effect. This logic is consistent with the principle of collaborative cultivation of grassroots talents among universities and local authorities. Under the collaborative model of government guidance, university responsibility and social participation, a talent supply system incorporating knowledge, practice, and value can be obtained.

The method of the applied undergraduate colleges in restoring rural revitalization has the characteristic of hierarchical transmission. At the level of talent supply, internal cultivation is a skill training of local practitioners in rural areas to improve their human capital. Outward delivery is a joint training model of

joint course construction, practical training and teacher training in a targeted output of compound talents in thermal agriculture directly fills the talent gap in rural grassroots governance, industrial operation, etc. In terms of technological empowerment, application-oriented colleges are most likely to transform scientific research results. With application-orientated disciplinary layout, institutions of higher learning can transform research results into practical technologies that match the needs of rural industries. This technology can be applied to support a scenario like cultivation characteristic industries, upgrading agricultural product processing, or rural ecological governance. Towards technological support for rural industries Transformation problem. As a resource connection level, educational institutions are a hub of connecting various innovative resources. They establish communication link between government, market and rural entities to promote the flow of policy resources, industrial resources and cultural resources to rural areas. However, actions in different service scenarios differ depending on the needs of rural areas. Industrial revitalization focuses on technology transformation and cultivation of industrial talents. Talent revitalization focus on promoting grassroots workers and providing them targeted employment. Cultural and ecological revitalization focuses on integration of resources and transformation of value.

3. Practical Experience and Implications of Domestic and Foreign Applied Colleges in Serving Rural Revitalization

Applied colleges and universities in Europe, America, Japan, South Korea and other countries involved in rural development have established relatively mature operation model. The goal is to bind characteristics of regional agricultural industries and talents cultivation, technological research and development to the demands of rural development [4]. Some European Universities of applied sciences have established the “field laboratory” model, which directly brings teaching and research scenarios to the front line of agriculture production. Teachers and students work with farmers and agricultural enterprises to develop technological advances and cultivate agricultural technical talents suitable for local industries in a targeted manner. The approach adopted by applied universities in Japan and South Korea is to work hand-in-hand with local governments and agricultural cooperatives to establish a stable cooperation mechanism [5]. Rejecting real

challenges such as the aging rural population and hollowing out industries, they have started short-term skills training courses and started projects supporting agricultural entrepreneurship. Besides stimulating local talents but also building characteristic agricultural brands. The common feature of this model is that universities are fully oriented to real needs of the region in running their schools, hence they form a closed-loop operation mechanism connecting demand feedback, resource matching and effect evaluation. For China application-orientated undergraduate colleges and universities, this is a reference model to better meet real needs of the rural area.

Application colleges and universities have accumulated localized experience serving rural revitalization. For instance Jilin Agricultural University is a typical example [6]. By strengthening construction of science and technology service platforms, science and technology resources of the university are more than matched with the needs of rural industries, supporting local development in areas like characteristic crops cultivation and improved production of agricultural products processing. By using the attribute advantages of vocational education, colleges and universities in Zhejiang have explored three directions serving rural revitalization: self-construction, service optimization and characteristic creation. By using the attribute advantages of vocational education, they have met the different needs of rural areas and gradually formed replicable service paths [7]. In response to the development needs of special regions such as revolutionary old areas in Baise, Guangxi, industrial alliance has been formed by collaboration between universities and local area, achieving a coordinated advance of industrial assistance and scientific and educational assistance [8]. This not only drives the overall revitalization of rural industries, talents, culture and other aspects, but also improves professional construction and talent cultivation quality of colleges and universities. Tongren University in Guizhou Province has focused its breakthrough on cultivating outstanding agricultural and forest talents, and establishing an education system that integrates university and local area and promotes industry-education collaboration. The goal of cultivating practical agricultural and forest talents has relieved Talent shortage problem in local rural areas [9]. Based on the practice of these regions, although each region has its own focus of exploration, the common goal is to adhere to application-oriented educational positioning, take

collaboration between school and local area as the focus.

4. Construction of the Evaluation Index System for the Capacity of Applied Undergraduate Colleges to Serve Rural Revitalization

The construction of an evaluation index system for the capacity of applied undergraduate colleges to serve rural revitalization aims to measure the actual achievements of the colleges in terms of talent supply, technical services, and resource integration (As illustrated in Figure 1).

Talent Service capabilities: is the talents being cultivated by schools appropriate for the local agriculture development direction? Is the number of talents trained for rural work each year in a targeted way? Is the number of skills training provided to local farmers/practitioners? Are students left in the community after graduation? Talent Resource Development: Local Colleges/Universities are used to test supply and demand matching. With these indicators, the weight can be adjusted according to the gap in rural area of different regions? If there are large number of exports of labour and very few skilled local people, then the weight of the number of people covered by skills training should be increased. This will reflect the real local demands. The sources of data depend mainly on cooperation agreement signed between school and local area, school talent cultivation plan, employment statistics table of students, local human resources and social security bureaus and other departments. Examine true effectiveness and role played by the talent dimension.

Technical support capability is the extent of whether the research work of the school is applied in rural areas and can solve practical problems. It refers to indicators such as practical technology development by schools useful for farmers and agriculture, the participation of schools in technological research projects in local characteristic industries, true implementation and promotion of technologies, the industrial technological level of designated assistance areas improved. This is in line with the characteristic of application-oriented undergraduate colleges that research should be focused on practical applications, and also to the fact that some local universities have think tank services inadequate, and technical contributions are relatively low. Dimension indicator refers to project of the school scientific research management system, list of local industrial technology demands, changes in the benefits of cooperative agricultural business entities. Weights relate to indicators related to cultivating

local characteristic industries, upgrading agricultural product processing, to measure more accurately how the technical supply of schools and the practical role they play in promoting transformation of rural industries.

The assessment of the resource integration abilities should be improved at the process level. Main indicators are the degree of operation of the university-local cooperation mechanism, number of platforms connecting government, industry, academia and research, number of social resource mobilization and stability of agricultural-related service teams. Specifically, the focus is on measuring the efficiency of institutions as resource hubs connecting government, market and rural entities. The weight will be more towards checking whether collaboration between different entities is smooth and whether each person has clear responsibilities. This will help us to better identify main obstacles when resources are transferred downward during the evaluation.

The service effectiveness aspect improves the evaluation from the result level. It includes secondary indicators such as growth rate of residents' income in assisted areas, growth rate of output value of characteristic industries, improvement rate of rural public services and satisfaction of service recipients. All indicator data are obtained from the public data of local statistical departments and third parties' on-site investigations. The weight Settings balances benefits and benefits. The weights are determined by Analytic Hierarchy Process and scored on a 100-point scale. Institutions of different regions can compare and improve their own services accordingly.

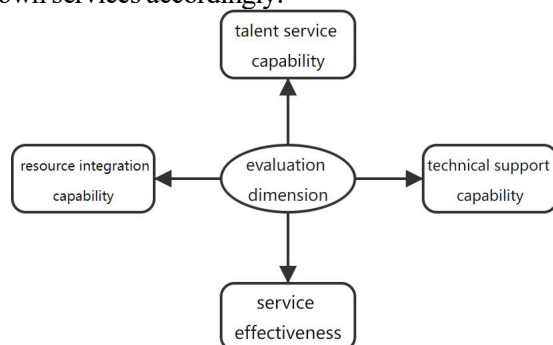


Figure 1. The Dimension Map for Evaluating the Capacity of Local Applied Universities to Serve Rural Revitalization

5. Implementation Paths for Typical Scenarios of Applied Undergraduate Colleges Serving Rural Revitalization

5.1 Service Paths for Rural Industrial

Revitalization

Application-oriented undergraduate colleges need first to identify the technological needs of regional characteristic industries and link scientific research activities to the pain points of industries. Agricultural-related majors can develop practical technologies for small and medium-sized agricultural enterprises around the direction of upgrading agricultural product processing and improving quality, breaking bottlenecks. Design-related majors can integrate brand research and development, packaging design teaching with industrial demands, and increase the market value of agricultural products through school-farmer cooperation. In rural areas with tourism resources, tourism-related colleges and universities can use their professional advantages to develop tourism routes and design business forms, and help to develop new business forms such as leisure agriculture and the integration of culture and tourism. Second, institutions of higher learning should establish a multi-party collaborative technology transfer mechanism, integrating teachers from different specialties to form a service team, providing full-chain intellectual support around industrial planning, technological upgrading, brand operation, etc. In addition, it will connect with government and market entities, provide technical assistance and resource connection for agricultural related entrepreneurship projects, promote implementation of the projects. Tourism colleges and universities can also build tourism connection platform to solve information asymmetry problem. Finally, institutions of higher learning should optimize their internal management to ensure continuity of services. Clarify the role of assistance personnel and select competent cadres or teachers to work in village work. Improve incentives, incorporate contributions to serving rural areas in performance evaluations, and guide teachers to focus on industrial needs. Tourism colleges and universities should develop relevant majors, optimize the curriculum and practical links, and continuously supply talents for rural cultural tourism.

5.2 Service Paths for Rural Talent Revitalization

One of the main ways applied undergraduate colleges can help to revitalize rural talents is to provide stratified and categorised training for new-type professional farmers [10]. For large scale farmers and breeders, and heads of agricultural businesses, modular courses can be built in combination with regional industries. Practical contents such as agricultural production technology,

e-commerce operation, and brand management can be integrated in teaching, and practical teaching bases can be built as support structures to bring training to the front line of production. For ordinary farmers, online and offline methods can be used to expand coverage, and technical advice can be established for farmers immediately. Value guidance can also be emphasized during training and to increase willingness of local talents to root in rural areas, and to link project incubation and resource support for trainees with entrepreneurial capabilities to lower the threshold of starting a business. If we are going to build a target training and supply mechanism for grassroots governance, education institutions need to create a target training and supply mechanism. First, we will adjust the curriculum according to the actual needs of grassroots positions, incorporate rural governance policies and mass work methods into teaching, and cultivate compound governance talents that "understand agriculture, love rural areas, and are close to farmers" through joint course construction, practical training and teacher training. Second, improve employment guidance mechanism at grassroots level, through ideologies and political education, guide students to establish professional concept of serving rural areas and increase willingness of graduates to work at grassroots level. Third, for those already on the job, customized special ability improvement courses are provided. Regular training is carried out around policy interpretation, digital governance, public services, etc.

To sustain talent cultivation, the internal support system and the university-local collaboration system must be improved to deal with current disconnect between talent cultivation and the rural demands. On one hand, the teaching staff should be optimized, the teaching team should be "down-to-earth" with theoretical knowledge and experience in the rural areas, and teachers should contribute to the cultivation of rural talent in performance evaluations. On the other hand, multi-party cooperation should be enhanced, an educational system where the government takes the lead, universities take the lead and society, local governments, agricultural enterprises, social organizations etc. should be incorporated into the educational content to the rural needs. Due to the imbalance of the industrial talent structure in some regions, local governments should also be working together to create talent introduction platforms, attract external professional talents and build a talent supply system that mixes local cultivation and external introduction.

5.3 Service Paths for Rural Cultural and Ecological Revitalization

For rural ecological revitalization applied undergraduate colleges can use their professional advantages in humanities and social sciences, design and other fields to explore paths for revitalizing local culture. On one hand, cross-disciplinary teams can sort out traditional skills, folk customs, red culture, etc., promote cultural inheritance and teaching practice, design-related majors can incorporate regional cultural elements into agricultural product packaging, cultural and creative development and cultural added value of products. On the other hand, they can participate in rural public cultural services, organize teachers and students for cultural volunteer services, plan folk activities, science popularization publicity, aesthetic education courses, etc. Moreover, rural cultural resources can be included in case library of ideological and political education courses to guide students to establish value orientation of serving the grassroots. In rural ecological revitalization, educational institutions need to focus on technical demands of optimizing living environment and changing green production. Colleges and universities with disciplines such as environmental science and urban and rural planning can participate in design of rural spatial planning and improvement plans, develop practical technologies such as sewage treatment, waste resource utilization, clean energy, etc. Students can be organized to carry out ecological publicity and research, which not only increases the awareness of the villagers, but also deepen their knowledge of the countryside, and can collaborate for service education. Given the resources of different rural areas, it is possible to explore transformation paths of ecological resource value, design ecological product development and tourism operation plans for ecologically advantageous regions, promote the transformation of green mountains and clear waters into gold and silver, and a mutually beneficial and mutually beneficial relationship between ecological protection and industrial development.

6. Construction of a Long-Term Mechanism for Cooperation between Applied Undergraduate Colleges and Local Authorities to Serve Rural Revitalization

To ensure long-term school-local cooperation, firstly, the rights and duties of all parties must be clearly defined and institutionalized agreements must define the roles of government, education

institutions and rural areas. Government is responsible for policy guidance, resource coordination and public service guarantee, connection between university and the local area and supporting policies. Educational institutions should adhere to application-oriented educational position, form relatively stable agricultural service teams, and provide services in fields such as talent cultivation, technological research and development, resource connection according to real needs of rural areas. Rural entities should provide feedback on development needs and offer practical scenarios for college teachers and students to research and implement technology. Only when rights and responsibilities are clear, problems such as unclear duties of assistance personnel and low efficiency of service promotion can be avoided. Hierarchical and classified resources share mechanism must also be established, which will break down institutional barriers between universities and local area. Policy resources of government, talent and technology resources of educational institutions, industrial and scene resources of rural areas should be integrated into a collaborative assistance system between universities and local think tanks, in order to promote the two-way flow of elements such as scientific research equipment, teaching resources, industrial information. Moreover, the needs of new quality productive forces should be integrated in resource integration, and discipline layout and specialties should be optimized to better match the real needs of rural industrial upgrading.

Risk sharing and incentive assessment are key components of long-term school-local cooperation. One way is to establish risk assessment and sharing mechanism among multiple parties. Risks of cooperation projects such as technology implementation and industrial cultivation should be reasonably estimated by the government, educational institutions and market entities. Only so can educational institutions be less worried about rural services. On the other hand, incentive mechanism for two-way flow of talents should be improved. Teachers should be rewarded for their work serving rural revitalization and their accomplishments should be considered in professional title evaluation and performance evaluation, and graduates who return to their hometown for employment and technicians who go front line should receive subsidies or policy support. At assessment level, combined with the capability evaluation index system, should focus on matching degree between talent cultivation to rural demands, the actual conversion rate of technological

achievement, and satisfaction of service recipients. Regularly organize third party evaluations and evaluation results directly affect the allocation of future cooperative resources. This way the cooperation between university and local area may gradually shift from fragmented short-term project-based assistance to a long-term and stable model of collaborative education and innovation.

We have considered the theory, action and practical approach of applied undergraduate colleges for rural revitalization. The theory of educational function, the theory of human capital and the triple helix theory support the logic of cooperative services between schools and localities to rural areas. The educational position of application colleges allows them to break from the limitations of traditional universities and achieve hierarchical service to rural areas via three paths: Talent supply, Technological empowerment and Resource connection. Domestic and international experiences show that demand-oriented closed-loop mechanism and differentiated service matching are key tools for accuracy. The four-dimensional evaluation system of talent service, technical support, resource integration and service effectiveness constructed in this paper provides an operational reference standard for evaluation of service performance of educational institutions. Innovation and Entrepreneurship education can further improve talent supply efficiency and provide new fuel to rural entrepreneurship and industrial upgrading.

Given the current limitations and practical challenges, future research could focus on three directions: first, for different regions such as major grain producing regions, ecological function zones, revolutionary old areas, differentiated service paths to avoid homogenized assistance; second, explore dynamic adaptation mechanism between adjustment of disciplines and specialties and upgrading of rural industries under new quality production forces; promote digital technology, green technology and other achievements to rural areas; break through the last mile; third, improve dynamic tracking system for school-local cooperation effectiveness; integrate long term benefits such as cultural inheritance and ecological protection into evaluation; provide empirical basis for policy optimization; transform project-based assistance into systematic and sustainable coordinated development.

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