

Pathways and Strategies for Vocational Undergraduate Education to Empower the Revitalization of the Rural Tourism Industry

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Abstract: *With the development of rural tourism in the direction of an experience economy and digitalisation, the demands for the quality of technical and skilled talents have become more diverse and fluctuating. Vocational undergraduate education has good potential for cultivating talents and training, and it can effectively combine industry experience with university education. Map the required talents to all kinds of job competencies, analyze how added value is created in the accumulation of technical skills in the service value chain, and build a closed-loop transformation system of educational factors and production factors. Next, the three main types will be introduced: Modular Curriculum Restructuring based on Job Task Maps; Embedded Collaboration of Immersive Practical Training and Operation Processes; and Two-way Knowledge Flow in Dual-Qualified Teaching Teams. Build an agile and iterative system of dynamic capabilities for the technical support of digital transformation in education, and through cross-regional alliance resource sharing and differentiated synergy strategies, establish a complete system of theory and practice.*

Keywords: *Vocational undergraduate education, rural tourism, industrial revitalization, integration of industry and education, accumulation of technical skills*

Introduction

In recent years, with the development of rural tourism, problems such as uneven service quality, structural mismatches in the supply of talent, and slow digital transformation have started to emerge. The main reason is that the demand of the industry for compound technical and skilled talents does not match the traditional training model of the education sector. Vocational undergraduate education is both academic and vocational, so it is relatively good at addressing this problem. To clarify the alignment logic, the main path and strategy optimisation for vocational undergraduate education in empowering the revitalization of the rural tourism industry will be to strengthen the technological content and innovative vitality of the rural tourism service value chain. Most of the previous studies have focused on the general direction of vocational education in supporting rural development at the macro level, and few have investigated in detail how vocational undergraduate education is applied at the micro level in the operation of the rural tourism industry. The purpose of this paper is to construct a complete system of analysis that moves logically from the theoretical foundation to the implementation plan and finally to strategic optimisation; it hopes to offer theoretical support for the talent cultivation reform of relevant majors in vocational colleges and provide a foundation for rural tourism enterprises to improve the allocation of human resources and technical services.

1. Alignment Logic of Vocational Undergraduate Education and Industrial Revitalization in Rural Tourism

1.1 Compatibility of Talent Specifications in Vocational Undergraduate Education and the Job Competency Spectrum of Rural Tourism

According to the requirements for cultivating talent in vocational undergraduate education, students should have theoretical knowledge of technology and practical skills in technology, as well as all-round abilities to solve problems in real work situations. Job clusters in the rural tourism industry cover all links of the chain, such as rural guiding, homestay operation, local culture experience design, ecological farm management and digital marketing. The required abilities of the practitioners in each

part are at different levels and also have interdependencies. At the core of this spectrum is the dual demand that practitioners need to learn standard service procedures and be able to flexibly allocate and creatively organise resources according to seasonal and regional differences in rural assets; thus, clear requirements have been set for the knowledge transfer and situation adaptation abilities of talents^[1].

According to the division of competencies, modules and projects have been introduced in vocational undergraduate education to develop various abilities, such as professional skills, teaching methods and social skills. Competencies of professionals refer to the technical requirements at the operational level of rural tourism posts, such as the operation of smart ticketing systems and the design of intangible cultural heritage experience activities; methodological competence is shown by the analysis of rural tourism operational data and the formulation of service quality improvement plans; and social competence is manifested in local cultural identity, teamwork and cross-role communication. The three kinds of competencies directly correspond to the mapping relationships of execution level, optimisation level and innovation level in the job competency spectrum of rural tourism, and are thus in good structural harmony.

1.2 The Value-Added Transmission Mechanism of Technical Skill Accumulation in the Rural Tourism Service Value Chain

The accumulation of technical skills is not the passive collection of knowledge; rather, it is an active process of learning about, absorbing, improving and innovating in technology. The accumulation of technical skills refers to the ability of practitioners in rural tourism to gain tacit knowledge through the operation of services, organise tourist feedback systematically, and redesign local resources. All the knowledge acquired in school has been organised and used in various ways, such as training projects, case studies and skill competitions, to create reusable and cumulative technical resources. When the above assets are added to the basic activities and supporting activities of the rural tourism service value chain, they will be used in sequence to create value.

In particular, the accumulation of technical skills is first employed in the service design stage to promote the upgrading of tourism products from uniform sightseeing to rich experiences, thereby increasing the depth of consumption per visitor and the desire to return. Therefore, at the time of service delivery, the standard operating modules and contingency plans that have been accumulated will reduce fluctuations in service quality and shorten the adjustment period for new employees in their roles. At the level of supporting activities, with the improvement of technical skills and the introduction of cost-control tools and customer-source forecasting models, some small-scale rural tourism enterprises have been able to increase the profit-retention ratio of the value chain indirectly. The whole transmission process has a bottom-up value-added amplification effect; that is to say, the more compounded and systematic the technical skills accumulated in the educational system are, the higher their added value to the service value chain will be.

1.3 Closed-loop Transformation of Educational Elements into Production Factors in the Integrated Industry-Education Ecosystem

The main feature of the integration of the industry and education ecosystem is that educational institutions and enterprises are no longer in a one-way talent supply relationship but have formed a network structure with two-way factor flow and collaborative value creation. Among them, the curriculum resources, training facilities, faculty expertise and student project results of vocational colleges are considered to be the set of educational elements, and at the same time, the site conditions, customer source data, service process pain points and brand assets of rural tourism enterprises constitute the set of production factors. There should be a clear norm and operating rules for the two types of elements; otherwise, due to information asymmetry and a mismatch of interests, an inefficient cycle will occur^[2].

The construction of this closed-loop transformation will require the cooperation of the three links below. First, the task requirements of real rural tourism service scenarios are converted into teaching projects, and thus students can accumulate technical skill results that can be directly applied in industrial environments during the implementation of the project; this process is called industrial-end encoding of elements. Second, the optimisation plans, prototype products and service process improvement suggestions put forward by students in teaching projects are fed back in reverse to the rural tourism operation links for verification and modification, and those results that meet the criteria are incorporated into the production factors to achieve value addition at the educational stage and the

industrial stage. Third, the new technical requirements and management problems that have arisen in the industry after adding educational elements will be once again included in the curriculum content and practical training design to complete an iterative update of the closed loop. Continuous operation of this closed-loop system will enable the empowerment of vocational undergraduate education for the revitalization of the rural tourism industry to have an autonomous dynamic foundation and not be dependent on external support.

2. Core Pathways for Vocational Undergraduate Education to Promote the Revitalization of the Rural Tourism Industry

2.1 Modular Curriculum Reorganisation and Dynamic Update Mechanism Based on the Job Task Map

A job task map for rural tourism is an organised list of the work areas in different positions and the logical relationships among them. The basis of the construction is the behaviour decomposition of the typical work task, frequency statistics of job competency attributes, and identification of key control points in the operation process. As shown in the map above, the curriculum system of vocational undergraduate education consists of the general literacy module, the basic skills module and the contextual expansion module. The foundation literacy modules are the general service standards for rural tourism, the core skill modules are particular task clusters, such as digital management of homestays and local cultural and creative planning, and the contextual expansion modules are for dealing with complex cross-position scenario tasks. Given the prerequisite-successor relationships and credit recognition of these modules, they can be combined in many ways to form a flexible curriculum network that meets the different career needs of students and better aligns talent cultivation with the demands of industries^[3].

In order to establish a dynamic update mechanism, data from all sectors of the rural tourism industry needs to be collected regularly and changes in the market must be continuously monitored. The technology variables are the number of iterations of smart guide systems, changes in the data interface of booking platforms and updates to immersive display equipment, and the market variables are shifts in the tourist profile, changes in consumption habits and the emergence of new types of tourism businesses. The vocational college education office will regularly contact industry consultants, graduates and online job websites to gather information on whether the current curriculum modules still meet the needs of the workforce and jobs. Based on the weight given by the expert panel, some of the module content will be adjusted or modified accordingly. A few classes will be selected to try the new modules and identify any problems before using them in all classes. Therefore, the life cycle of the curriculum modules will be in line with that of rural tourism job tasks, and the educational results will not fall behind the needs of the industry.

2.2 Collaboration and Integration of Immersive Practical Training Scenarios and Rural Tourism Operating Links

An immersive practical training scenario is a type of teaching that reproduces the space, way of operation and flow of information in a real rural tourism business with high detail. The four basic parts are: Physical Space Layout, Service Process Simulation Software, Tourist Behaviour Simulation Model and Real-time Data Feedback System. It is no longer a traditional training room; now, many roles need to be taken in the immersive scenario, and there are also random events, so learners must complete the entire operating cycle from demand identification to service provision in a short time. Based on the touchpoint map of the links in the operation of rural tourism, the sub-links such as guest reception, room status management, activity organisation and complaint handling are mapped to different functional areas in the training scenario, and at the same time, information transmission specifications among these areas are set up to allow learners to experience the linkage of operating links in various roles.

The first purpose of embedded collaborative integration is to reduce the time and place gap between practical training and actual work, so that both kinds of activities can be carried out at the same time on the same task carrier. Some of the non-essential operating tasks or test operation tasks of the rural tourism enterprise can be given to the learner team in a practical training scenario to achieve the teaching goal of obtaining actual operating data and service records for the enterprise. According to the above data, the operators will build their own service quality monitoring systems and adjust the

standard operating procedures or staff schedules accordingly. At the time of integration, the operation logs in the practical training scenario and the operators' operation systems will be synchronised via Application Programming Interfaces, and both sides will have the same set of task status views. Therefore, the combined relationship will extend the practical training activities to be in line with the actual work supervised by teachers and avoid conversion loss between the learning environment and the working environment.

2.3 The Two-way Knowledge Flow Model of Dual-Qualified Teaching Teams and the Inheritance of Rural Tourism Craftsmanship

The two qualified teachers in the teaching team are full-time teachers with front-line industry experience who have obtained the corresponding technical grade certificate, and there are also part-time mentors from rural tourism enterprises. The special feature of this team is that its members bring various types of knowledge from all over the place: full-time teachers are good at organising technical knowledge systematically and breaking it down for teaching, while part-time mentors have accumulated a large amount of situational knowledge that is difficult to put into words, such as emergency response scripts for bad weather, communication habits of tourists from different areas, and how to combine local materials aesthetically. The two types of knowledge will confirm and supplement each other in the teaching process, so a more reliable system of teaching materials can be built than that based on a single source.

The two-way knowledge flow model has the form of two transmission paths that go in opposite directions but are also strengthened together. First of all, there is a side flow of part-time mentors to full-time teachers and learners, and the carriers of this flow include reviewing typical service cases, hands-on operational demonstrations and oral explanations of the decision-making logic in non-standard situations. This way is to learn by doing and observing; that is to say, one acquires knowledge through the experience of rules in the industrial field. Second, there has been a change in the direction of full-time teachers to part-time mentors and to the industrial end; this includes explanations of technical principles, how to use quality management tools, and training steps for data analysis models. The above way can increase the level of verifiable and transferable technical knowledge for part-time mentors and help the industrial end optimise the efficiency of experience inheritance. The two flow paths meet at the teaching case library and the industrial problem-solving library; these have been jointly built by the team, so knowledge can be continuously recorded, questioned, revised and re-encoded in the flow process to form a self-reinforcing knowledge ecosystem.

3. Strategy Optimization for Vocational Undergraduate Education to Empower the Revitalization of the Rural Tourism Industry

3.1 An Agile Iterative Framework for Talent Cultivation Programs Based on Dynamic Capabilities

Dynamic capabilities are the abilities of a company to adjust its resources and organisation promptly in response to changes in technology and the market. Based on the above work, we have now added more forms of talent cultivation programmes to vocational undergraduate education. It is no longer a fixed-cycle, static document; rather, it is an open system that can be observed, recognised and modified. First, we need to identify the new job skill deficiencies and changes in the service model for rural tourism; second, based on these changes, set specific learning outcome indicators and adjust the weight parameters of the curriculum modules; finally, we need to revise the existing curriculum sequence, practical training content and assessment methods. The three functions are connected to form a closed-loop feedback circuit; thus, the talent cultivation program can be adjusted step by step before the start of each teaching period and does not need to be significantly changed every three or five years^[4].

The work carriers of the agile iterative framework are the annual rolling revision plan and the version control policy. At the same time, every year the program director, industry advisors and graduate representatives will jointly review the implementation data of the previous cohort's cultivation program, such as course completion rates, feedback from internship units and changes in word frequency in rural tourism job postings. Based on the results of the review, some modifications will be made to the competency matrix in the cultivation program; however, due to the constraint that the total credits and core curriculum sequence must remain unchanged, the scope of revision will be limited to ensure the executability of teaching resources. Assign a version number and a reason for the change to

each revision, and keep a record of the modifications. The above framework will help us keep up with the changes in the rural tourism industry and avoid disruption to the teaching schedule caused by many large-scale modifications.

3.2 Construction of an Educational Technology Support System in the Context of Digital Transformation of Rural Tourism

The four technology dimensions of the digital transformation of rural tourism are online booking channels, datafication of tourist behaviour, intelligent service touchpoints and visualisation of local resources. The set of technological tools and data flow specifications that help to promote the integration of the above dimensions in the process of talent cultivation is called an educational technology support system, and it includes a teaching-level rural tourism operation simulation platform, a lightweight data analysis dashboard and a mobile skill assistance module. A copy of the interface and a small-scale database of open-source booking systems commonly used by small-scale rural tourism enterprises will be built in the simulation platform, and learners can practise order handling, inventory management, revenue forecasting, etc., without the risk of real operation. Generally speaking, the three types of analysis models that will be used in the development of the rural tourism data analysis dashboard are source market analysis, trends in satisfaction scores and statistics on service response time; the resulting data can be directly used to formulate service improvement plans.

The system has been designed in a modular way, and all modules will communicate with each other through a standard application programming interface to manage the import and export of data among all the various commercial systems actually used in rural tourism and the teaching system. Optimization plans developed by learners during their on-campus practical training can be exported in the form of standard operating procedure manual files for trial use by cooperative operators in their daily work, and at the same time, anonymised operational data from the operators can be imported back into the simulation platform as raw materials for teaching cases. Operation logs and learning behaviour data generated during the operation of the system can be used to monitor the quality of teaching and conduct research on the operational efficiency of rural tourism; thus, a technological symbiosis will be formed between the educational support system and the digital transformation of the industry.

3.3 Resource Sharing and Differentiated Synergy Strategies of the Cross-regional Rural Tourism Education Alliance

The Cross-Regional Rural Tourism Education Alliance consists of vocational undergraduate institutions in different areas and the networks of rural tourism enterprises built by these institutions. The first reason for the alliance is to solve the problem of resource scarcity in individual institutions, and by combining the resources of all members, increase the total teaching strength. There are all sorts of resources, such as curriculum plans, training venues, part-time mentor groups, typical service case databases and graduate employment channels. The sharing mode of the resources has been divided into several levels of permissions; that is to say, basic resources are available to all alliance members, but resources that contain specific local knowledge or core commercial data are restricted in terms of access and can only be used after agreeing to the usage terms of the resource provider.

According to the different types of rural tourism resources in their areas, the alliance members should have various development goals for their partnerships and avoid uniform competition. For example, one member is in charge of training talent in the organisation of outdoor activities for the organisation of mountain-type rural tourism; another member is focused on nurturing talent for the operation of homestay clusters in water-town-type rural tourism; and a third member is developing talent for cultural experience design for ethnic-village-type rural tourism. Through course cross-selection, short-term study exchanges and joint graduation projects, the alliance has achieved cross-integration of the above different directions and allowed learners to gain a comparative understanding of rural tourism operation models in other regions and master the special skills of their own areas. Indicators of the efficiency of resource utilisation will be set by the alliance to monitor regularly how well the resources contributed by each member are being used and how accessible they are; based on this assessment, the operating rules of the alliance will be adjusted to ensure the continuous operation of the collaborative network.

Conclusion

The roots of the revitalisation of the rural tourism industry through vocational undergraduate education have been identified in this paper, and the corresponding logic, main paths and strategies have been studied. Alignment Logic refers to the structural consistency of talent specifications and the job competency spectrum; it also includes the transmission of added value through the accumulation of technical skills in the service value chain and the achievement of closed-loop transformation from educational elements to production factors in the integrated industry-education ecosystem. First of all, the modules should be in line with the job-task map; second, integration of immersive practical training and operational links needs to be strengthened; finally, a two-way flow of knowledge among dual-qualified teaching teams should be established. Optimisation of Strategy refers to the continuous modification and improvement of dynamic capabilities to promote the development of educational technology support systems for digital transformation and resource sharing, as well as all kinds of synergy mechanisms in cross-regional alliances. In the future, we will empirically study all the ways empowerment affects rural tourism resources under different circumstances, examine in detail the process of empowerment with immersive practical training and artificial intelligence/virtual reality technologies, and build quantitative relationship models between the input of educational factors and industrial output to improve the computability and evaluability of empowerment strategies.

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