

# Research on the Strategy of Colleges Serving Regional Economy Based on Functional Space Theory

Lan Zhang<sup>a,\*</sup>, Hongxia Wu<sup>b</sup>

Preschool Normal Department, Sichuan Science and Technology Vocational College, Chengdu, Sichuan, China

<sup>a</sup>825182196@qq.com, <sup>b</sup>406864807@qq.com

\*Corresponding author

**Keywords:** Local Colleges and Universities, Regional Economy, Social Development, Path Strategy

**Abstract:** For local colleges and universities in the practice of the social service, talent cultivation and social demand does not match, low conversion rate of scientific and technological achievements, cultural inheritance, innovation ability is weak, according to the principle of synergy theory, symbiosis theory, sets up the theory of running a school of social service in higher vocational colleges, the needs of the development of social service as a school, constructing university-enterprise cooperation practice education platform, Thus achieving the goal of strengthening local orientation and improving social service consciousness. It improves the ability and level of colleges and universities to serve regional economy.

## 1. Introduction

The weak connection between social service and social demand in colleges and universities leads to slow development and small contribution to regional economy. It is necessary to improve the consciousness of social service, analyze the problems of colleges and universities serving regional economy, understand the essence of social service, and study the methods and strategies of serving regional economy.

Foreign representatives mainly include schulz's human capital theory [1], denison's growth factor analysis and romer and Lucas' new growth theory [2,3]. The role of education is to improve the quantity and quality of labor force, and education is the main factor affecting economic growth. In domestic research, Qian Peizhong (2006) pointed out that local colleges and universities should take regional development needs as the basis for their own planning, provide all-round services for the region, and obtain educational resources to achieve mutual benefit and win-win between colleges and regional economy and society [4]. Cheng Zhaoji (2013), based on the symbiosis theory, pointed out that local colleges and universities serve regional economic and social development through talent training, technical support and industrial support, while regional comprehensive strength and government strategy determine the development direction of local colleges and universities. From the above studies, it is found that there are more theoretical studies, more analysis on general problems, and less analysis on implementation paths and strategies [5].

Based on the synergy theory and symbiosis theory, this paper analyzes the significance and service path of regional economic and social development of local colleges and universities, uses theoretical analysis and case demonstration combined with research methods to find effective ways and strategies, and proves the effectiveness of the path and strategy through practice.

## 2. Overview of Relevant Theories

### 2.1. Core Concept Definition

Regional economy refers to that part of the national economy distributed in each administrative region, which is the economic and social construction within a certain region. In essence, regional

economic development is a virtuous circle of improving the quality of workers, increasing the content of science and technology in production, optimizing the regional economic structure, accelerating the transformation of scientific and technological achievements, possessing advanced and civilized ideology of main workers, and economic development order.

Social service refers to the transfer of talents, science and technology, knowledge to society by colleges and universities, which has the basic characteristics of social orientation, reality, academic, service and so on. Social service is the historical mission and responsibility of colleges and universities, as well as the need of their own sustainable development. Colleges and universities continue to expand the field of social service, enrich the service content and improve the service ability by providing high-quality workers for the society, school-enterprise cooperation in running schools and joint scientific research.

## **2.2. Overview of Synergetic Theory**

In the system of interactive development between universities and regions, the local government, society, universities, enterprises and institutions are all subsystems of it. To make the two subjects coordinate and complement each other and develop toward an orderly state, the synergetic theory is very important.

Synergetic theory is a new discipline which studies the common characteristics and synergetic mechanism of different things. It focuses on the similarity of systems as they move from disorder to order. The main research content of "synergetic theory" is to make use of the interaction between various elements, so as to make the whole system maintain reasonable and orderly operation, and promote things from the old structure to the new structure of the law. The formation of order mainly includes three aspects:

Synergistic effect refers to the overall effect obtained by the coordination and adaptation among the elements of a subsystem in a complex and open system.

The servo principle means that the fast variables follow the slow variables, and the order parameters dominate the subsystem behavior. It describes the process of self-organization of the system in terms of the interaction between stable factors and unstable factors. Its essence lies in stipulating the simplification principle of the system on the critical point.

The power of self-organization comes from the internal of the system. The internal subsystems give full play to their subjectivity and cooperate with each other to form the structure or function of self-organization consciously and actively, which drives the system to achieve a new orderly state of self-perfection and self-development..

## **2.3. Overview of Symbiosis Theory**

Higher education should pursue reciprocity and symbiosis with the external social environment, and in the process of symbiosis, mutual benefit and win-win between local universities and regional economy and society is an inevitable trend.

Symbiosis theory involves the research of biology, pedagogy, management and other disciplines. The concept of symbiosis holds that organisms promote mutual growth in mutually beneficial ways. It provides a new way of thinking to deal with the relationship between human and organization and adjust various contradictions in human society. "Symbiosis is the basic way of human survival, and social progress is to improve human symbiosis." The construction of "symbiotic education" has always been a problem that educators attach great importance to. Higher education should pursue reciprocity and symbiosis with external social environment and respect the development law of higher education itself in the process of symbiosis. The development of higher education system and the development of regional economy and society is an inevitable trend of mutual benefit.

## **2.4. Multidimensional Space Theory**

Multidimensional space norm can measure N variables simultaneously, which makes it possible to describe and analyze many design space variables systematically and comprehensively at the same time.

Define the norm  $u \in C^m(t)$  for any given

$$\|u\|_{m,p} = \left( \sum_{|a| \leq m} \|\partial^a u\|_p^p \right)^{1/p}$$

$S = \{u \in C^m(t) : \|u\|_{m,p} < \infty\}$ , This is called Sobolev space.

Defining Sobolev space can solve the problem of studying variables and their rates of change simultaneously. Can assist other conditions, using norm to study the function. Position space, motion space, and energy space all involve functions and their derivatives,, respectively represented by  $u, u', u'', u''', u \in C^m(t)$ , and specify the norm:

$$\|u\|_{m,p} = \sum_{|a| \leq m} \|u\|_p^{1/p} = \int_{\xi_1}^{\xi_2} |u|^2 dt + \int_{\xi_1}^{\xi_2} |u'|^2 dt + \int_{\xi_1}^{\xi_2} |u''|^2 dt + \int_{\xi_1}^{\xi_2} |u''|^2 dt$$

$\|u\|_{mp}$  norm can measure four variables simultaneously. The spatial variables of economic function curve can be defined in a similar way. They are all Sobolev Spaces in the same form.

### 3. Existing Problems

#### 3.1. Problems with Schools Serving Local Economies

There is not enough awareness to actively serve local areas. There are no specific measures on how to exert the service function of colleges and universities, and how to examine and evaluate the service function of colleges and universities. Although the school has cooperated with the local government and enterprises, it has not brought practical benefits to the school, resulting in the school's low enthusiasm for service. There exists certain contradiction between talent training and local talent demand. The professional setting of vocational schools lacks scientific and reasonable planning, so it is necessary to coordinate the professional setting, professional standard setting and production process teaching according to the current situation of local industrial development and the actual demand of enterprise human resources.

Discipline construction is in its infancy. The discipline direction is not prominent enough, the research direction is not concise enough, the discipline construction is relatively weak, and there are few leaders. In the aspect of talent training, too much emphasis on specialty leads to specialization of talent training, insufficient knowledge range and insufficient social adaptability.

The conversion rate of research results is not high. The conversion rate of research results is not high. The scientific research foundation of local universities is relatively weak, and the scientific research atmosphere is not strong enough, so the enthusiasm of teachers to carry out scientific research is not enough, and the level of scientific research is generally low..

Mechanisms for serving local economic and social development are not sound enough. Although universities have been carrying out school-local cooperation and school-enterprise cooperation for a long time, the system and institutions need to be improved.

#### 3.2. Problems Existing in Local Governments, Industries and Enterprises

The local government is too strict about the control of local colleges and universities. For a long time, our local government control of local colleges and universities is still too much, too fine, too strict and too tight, but not enough to the real development demand of local colleges and universities. Lack of macro coordination and guidance to the development of colleges and universities. At present, due to the limited service function of local colleges and universities and insufficient contribution to local economy and society, some local governments do not pay enough attention to the important role of local colleges and universities in local social development.

Financial input to local colleges and universities is not strong. After the popularization of higher education, local government appropriation has become the main source of funding for local colleges

and universities. Local enterprises lack trust and support for local colleges and universities. Many local colleges and universities do not perform well in leading local economic development, so local enterprises do not trust the scientific research level of local colleges and universities enough.

Local enterprises have little demand for scientific and technological achievements. Local enterprises are the basic forces to promote the development of local national economy, to construct the main body of local market economy and to promote the stability of local society.

### **3.3. The College Serves the Regional Economy**

Huang Shuixiang (2017) pointed out that in some economically backward areas, colleges and universities lack the awareness of active service, showing a scattered and scattered state, and there is a utilitarian tendency in the purpose of service. Wu Shufang (2011) believes that the distribution of disciplines and majors is unbalanced with the regional industrial structure, and the supply of high-quality scientific and technological achievements directly used to promote industrial scientific and technological innovation and solve the problems in actual production is insufficient.

Lin Zhongying (2009) believes that the reason for the lag in the adjustment of disciplines and majors in local universities lies in the failure to fully investigate the development trend of industries in the setting of majors. Based on the above views, the fundamental cause of the problem of college serving regional economy is the lack of systematic understanding of education and local economy. Education serves economic construction, local economy supports school development, and serving local economy is the life source of school. Based on synergy theory and symbiosis theory, this paper analyzes the significance and service path of local colleges and universities in serving regional economic and social development, and explores the path and strategy effectiveness of local colleges and universities in serving regional economic and social development.

## **4. Service Path Analysis**

### **4.1. Cultivate Applied Talents**

Colleges and universities are based on local areas and serve local areas. Guided by the needs of the industry, they improve students' theoretical and practical ability and collaboration ability, improve the quality of talent cultivation, promote the construction of disciplines, and enrich students' professional knowledge. Strengthen the teaching force, the introduction of double-qualified teachers. Use education and teaching practice platform to train students' practical ability.

Strengthen industry-university-research cooperation education and develop students' innovative quality. Industry-university-research cooperation organically combines learning, production and scientific research, provides opportunities for students' practice, creates conditions for developing students' innovative quality and improves their innovative ability.

### **4.2. Technological R&D Boosts Productivity**

The scientific and technological forces of colleges and universities promote regional economic and social development, solve technical problems for enterprises and institutions in the region, improve production efficiency, and use scientific and technological research and development to promote regional economic and social productivity.

Colleges and universities have good scientific research equipment and high-level scientific research teams. Through scientific research activities, colleges and universities provide new knowledge and new practical technology to promote and promote regional economic, social and scientific progress. According to the needs of regional economic and social development, we will cooperate with regional enterprises to establish a regional scientific and technological innovation system and a scientific and technological service system.

### **4.3. Cultural Inheritance and Innovation Promote Regional Cultural Development**

Universities lead the ideological and cultural demands of regional society through cultural activities, academic research and ideological dissemination. Inheriting regional culture is the mission of colleges and universities as well as the way to enhance their competitiveness. Regional

culture embodies the cultural essence of the region, carries the memory of a region, and points to the future of cultural development. It has become an important way for colleges and universities to absorb nutrition from regional culture, excavate regional cultural characteristics, enhance cultural consciousness and enhance cultural self-confidence.

Use of classroom teaching, inheriting regional culture in colleges and universities should fully tap the rich connotation in culture teaching in the classroom, carrier and form innovation, combining the first class and second class, classic culture heritage area, guide students to consciously combine personal value and regional development, to serve the economic construction and social development. To carry out various academic activities and promote regional characteristic culture.

## **5. The Solution to the Problem**

### **5.1. Strengthening Local Positioning**

We will strengthen our awareness of social service. Colleges and universities have the conditions and the responsibility to provide human, technical and cultural support for regional economic and social development. According to the characteristics, advantages and service capacity of the school, as well as the actual needs of regional development, the choice of different service models. Strive to improve the quality of services, highlighting the focus of services. Encourage university teachers to participate in scientific research and development, work or practice in enterprises and research institutes, and improve their academic, technical and practical abilities.

We will make clear the position of universities in running schools. Colleges and universities are founded to promote local economic development and their basic responsibility is to serve regional economic development. We should give priority to the development of key disciplines and cross-disciplines oriented to the development of regional pillar industries, expand the level of education, adjust the structure of disciplines, and strive to develop characteristics in line with social needs.

### **5.2. Grasp Regional Talent Demand**

We will innovate the mode of talent training in colleges and universities, and intensify the training of high-level application-oriented talents with students as the center, ability as the center, and employment as the orientation. Train students to use knowledge to solve practical problems. Based on the needs of economic and social development, efforts should be made to build a unique discipline system, balance general courses and professional courses, and determine the proportion of theoretical teaching and practical teaching. To construct an employment-oriented curriculum system and make due contributions to regional economic and social development.

Actively adjust the layout of disciplines and specialties. When colleges and universities set up majors, they should consider the needs of students' development, employment and enterprises' needs for talents, adjust the layout of disciplines and majors, and help the development of regional leading industries. Discipline construction is the most important work in universities, which plays a mainstay and leading role in the development of colleges and universities.

### **5.3. Grasp Regional Science and Technology Needs**

The scientific research in colleges and universities is oriented by the needs of the industry. To timely understand the hot spots, difficulties and key problems in regional economic and social development, and strengthen the popularization of practical technology. Solve the scientific and technological problems of local private enterprises and small and medium-sized enterprises.

Improve the evaluation and incentive mechanism. The system of transformation and distribution of scientific and technological achievements in colleges and universities should balance the interests of the university and the individual, and establish a teacher incentive mechanism guided by performance contribution and ability level, so as to make the achievements have application value and bring social benefits. In terms of income distribution, we will improve the service and guarantee system for scientific and technological achievements, vigorously promote the integration

of enterprises, universities and research institutes, and form cooperative alliances. The cooperative alliance is mutually beneficial and closely fits the market demand.

#### **5.4. Strengthen Cultural Dissemination**

We will promote research on the development of local cultural characteristics. Colleges and universities should determine the focus and target of cultural research and carry out cultural research with local characteristics. Strengthen the construction of cultural industrial parks in colleges and universities. Use the superior resources of colleges and universities to establish new cultural industries such as cultural tourism and cultural entertainment, and establish "cultural industrial park".

Strengthen campus culture construction. Campus culture responds to regional culture with its characteristics of compatibility and tolerance. Campus culture construction is an important part of regional cultural soft power construction. Improve the construction of campus material culture, beautiful and civilized campus material environment, the construction of campus culture with regional characteristics. Regional characteristics include geographical environment, history and culture, folk customs and so on, among which the spirit of patriotism, innovation and enterprising spirit, rigorous learning spirit and other spiritual culture is the basis of the construction of campus culture in colleges and universities.

#### **6. Conclusion**

The root cause of the problem of serving regional economy is the lack of systematic understanding of the relationship between schools and enterprises, and the lack of understanding that serving local economy is the life source of schools.

The strategy of serving regional economy: to improve the understanding of service by setting up the idea of actively serving the society; Adjust the layout of subject and specialty to cultivate high-quality talents needed by the society; Strengthen applied research and improve the conversion rate of scientific and technological achievements; Pay attention to campus culture construction, create a good social service culture environment, comprehensively improve the ability and level of colleges and universities to serve regional economic and social development.

It is very important to grasp the needs of regional economy. In view of the problems existing in the process of serving regional economic and social development, propose solutions to solve the problems and optimize the service:

#### **Acknowledgements**

The authors greatly appreciate the following sponsors for their support to the study: Soft Science Project of Science and Technology Department of Sichuan Province, "Intelligent NUMERICAL control system based on physical motion control principle" 22RCYJ0005.

#### **References**

- [1] Schultz,T.W.(1963).The Economic Value of Education. [J].New York: Columbia University Press, 2002(3).
- [2] E.F.Denison.(1967)."Why Growth Rates Differ?". [J]. Washington D.C. Bookings Institution
- [3] Wende M.C.Internationalisation policies:about new trends and contrasting paradigms [J]. Higher Education, 2001(14).
- [4] Qian Peizhong, PAN Haitian. Research on Higher Education, 2006(10):107-109. (in Chinese)
- [5] Cheng Zhaoji. Theoretical exploration of symbiotic development of local universities and regional economy [J]. Teacher education research, 2013, 25(05): 6-10+5.