

Exploration on Establishing Characteristic Laboratories in Universities to Serve Local Economic and Social Development in the New Era

Bolin Deng

Asset Management Center of Pu'er University, Pu'er, Yunnan, China

504901314@qq.com

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Abstract: It is an important responsibility of local universities to cultivate advanced application oriented talents for local economic construction and social development by using local advantageous resources. The key laboratories with unique local characteristics provide a favourable platform for the development of this ability. Pu'er university is located in the subtropical region, with very rich biological resources with characteristics of hot areas. In this paper, we explore the key problems of local universities in cultivating urgently needed advanced applied talents in biological resources development and serving the local economic development by building the analysis and testing laboratory for the development and utilization of biological resources with characteristics in hot areas. Finally, we summarize the practical experience of Pu'er University in this respect, and provide a demonstration role for the experimental teaching reform of local universities and the service of local economic and social development.

1. Introduction

At present, the social responsibility of universities is increasingly prominent. How to better integrate into the society and base on the local economy and serve it has become an important issue for universities to improve their own ability^[1]. Serving the local economic and social development is an important duty of universities. Universities are also valuable resources for the development of local economy. How to coordinate the relationship between universities and local economic and social development is a major issue that needs to be constantly explored^[2-3]. Therefore, how to integrate experimental teaching, scientific research, training application-oriented talents and serving local economic and social construction to speed up the construction of specialized laboratories with local characteristics is a problem worthy of further exploration^[4]. Pu'er university is located in the subtropical zone and has abundant biological resources with characteristics of the hot zone. As a local comprehensive university, it has made great progress in the reform of experimental teaching and the construction and management of local characteristic laboratories. It has studied and explored the cultivation of application-oriented talents and the ability to serve the local economic development, and achieved certain results.

2. The Necessity of Establishing Characteristic Laboratories in Local Universities

2.1. Serving Local Economic Construction and Social Development

Local universities undertake the important task of cultivating advanced talents with applied skills for local economic construction and social development^[1,5]. Economic globalization has brought about a profound transformation of the mode of economic development, and science and technology, and the contribution rate of science and technology to social development is getting higher and higher. As an important platform that can provide high-level public technical support and services for local economic development, the characteristic laboratories of local universities should constantly strengthen the awareness of serving the local economy^[6].

Pu'er university is located in the subtropical region, with very rich biological resources with

characteristics of hot areas. In 2014, the development plan for building a national green economy pilot demonstration zone in Pu'er City put forward a clear goal: focusing on advantageous and characteristic biological medicine, promoting the standardization and large-scale planting of the biological medicine industry, cultivating backbone enterprises, building Pu'er biological medicine brand, and promoting the sustainable development of Pu'er biological medicine industry^[7]. The plan of building four national green industrial bases is given, one of which is to build characteristic biological industrial bases. In the planning, building a bio pharmaceutical circular economy industry chain and a plateau characteristic food industry chain are two important leading projects. With the construction of the Plateau Characteristic planting and breeding base, strengthening the processing of agricultural and sideline products, cultivating leading enterprises and famous brands as the core, building the plateau characteristic food industry chain, developing and expanding the Pu'er plateau characteristic food industry, and building a green organic food industry base.

The development of the industry needs strong scientific research support^[8]. As a local university, Pu'er university has been committed to improving its ability to serve the local economic development. Through the construction of the "Key Laboratory for the development and utilization of medicinal and edible biological resources" and the "Key Laboratory for the analysis and testing of the development and utilization of characteristic biological resources in hot areas" of the Department of education of Yunnan Province, the university supports the work of food quality and safety testing and the analysis of effective ingredients of Chinese herbal medicines. It provides basic support for relevant scientific research and provides effective scientific research services for the development of local characteristic economy.

2.2. Cultivate Advanced Biochemical and Agricultural and Forestry Professionals

Universities have always adhered to the concept of "serving the local and building the school with characteristics", and based on improving the quality of education and teaching and enhancing the ability to serve the local economic and social development, they have laid a solid foundation in teaching, management and personnel training, and formed relatively distinct research characteristics in ethnic culture research and regional research, Since then, universities have embarked on a characteristic development road of serving local economic and social development and cultivating application-oriented professionals^[3,9].

The construction of the analysis and testing laboratory for the development and utilization of characteristic biological resources in the hot area has built a platform for teachers and students to explore. Here, students can participate in various scientific research projects, improve their ability to discover, analyze and solve problems, and improve their innovation level in the continuous scientific research and exploration. The biological industry is a technology intensive industry. The rapid and healthy development of the industry needs a large number of professional and technical personnel as the backing. Pu'er City is rich in green resources, but it is extremely short of professionals in biology, food, pharmacy, chemistry and agriculture and forestry. The cultivation cycle of professionals in biology, food, pharmacy, chemistry and agriculture and forestry is long and the cost is high. The laboratory conditions of our university for cultivating the above-mentioned professionals are not perfect, which seriously restricts the cultivation of professionals. Therefore, it is necessary to increase the investment in the analysis and testing laboratory, so that the characteristic biological resources analysis and testing center in the hot area of the university can become a large platform for the cultivation of high skilled talents in biology, food, pharmacy, chemistry and agriculture and forestry, a basic platform for supporting the University to carry out large-scale projects at the national, provincial and ministerial levels, supporting the discipline construction of the university, and providing a good practice teaching and research base for the cultivation of advanced talents.

2.3. Promote the Integration of Teaching and Scientific Research

Through the establishment of local characteristic laboratories, it can promote the construction of disciplines and strengthen scientific research^[10], make the undergraduate teaching and scientific research work smoothly, provide guarantee for the enhancement of teachers' teaching and scientific research ability and the improvement of students' comprehensive quality, and finally achieve a

breakthrough in social services ^[1,11].

Pu'er university is a local undergraduate university upgraded in 2012. At present, the main problems of the university's laboratories are the separation of laboratories, insufficient equipment resources, scattered placement, and low sharing rate of teaching and scientific research, which seriously restricts the further improvement of the quality of talent training. In order to solve the above problems and highlight the characteristics of application-oriented schools, the most effective way is to establish a perfect experimental operation platform through the integrated construction of teaching and scientific research, carry out extracurricular scientific and technological activities and innovative experiments, and cultivate students' experimental and practical ability. Let students master the operation methods of advanced instruments and equipment, improve their research ability, so as to lay a solid foundation for them to continue their studies or work. In addition, through the construction of the characteristic biological resources development and utilization analysis and testing laboratory in the hot area, the high-level scientific research platform can provide good experimental research conditions and academic environment for scientific research teachers, help them obtain more original research results, and thus support the specialty and curriculum setting in the discipline construction.

3. Difficulties in Establishing Characteristic Laboratories in Local Universities

As a local undergraduate university, Pu'er university needs to build and improve its infrastructure, teaching staff, school environment and scientific research platform. There is a lack of high-level practical teaching platform and scientific research achievement transformation platform. As a local university in the border area, it is far more difficult to run a school than other universities. It is not only the traditional fund, school running conditions, teaching staff and other problems, but also the most basic discipline and professional support conditions, teaching and experimental facilities and platforms, scientific research platforms and public service system construction, which are difficult to be effectively guaranteed. The establishment of professional laboratories with local characteristics can promote the improvement of school running conditions, the improvement of teaching and scientific research level, and help Yunnan Province to build a national radiation center facing south and Southeast Asia.

3.1. Major Construction of Key Disciplines

Discipline is the combination of talent training, scientific research and social services, an important platform for condensing and cultivating talents, and a concentrated expression of the level of running a university and its comprehensive strength ^[8]. The university attaches great importance to the construction of key disciplines, and focuses on building the advantages of local characteristic disciplines in accordance with the mode of professional group construction, so as to further improve the level and level of running schools. However, at present, our university has no provincial-level key disciplines at undergraduate level, which lacks strong support for the construction of key disciplines and the construction of local characteristic experimental training rooms. At the same time, the structure and layout of key disciplines need to be further optimized and the strength of key disciplines needs to be further improved.

3.2. The Cultivation of Applied Talents Urgently Needs the Construction of Teaching Experiment Platform with Local Characteristics

Pu'er city is an area rich in biological resources, with biodiversity as its prominent feature. It is also a national green economy experimental demonstration area, an ideal place for green development, leisure and old-age care in the future, and tourism service is an inevitable choice for future development. The two characteristic professional groups of agriculture, forestry and biodiversity, tourism service and leisure and health care that Pu'er University focuses on are lack of professional scientific research platform and professional ability practice training base. Moreover, to cultivate application-oriented talents with local characteristics, it is necessary to solve the problem of students' practical ability through practical links such as laboratories and training venues. The construction of characteristic teaching laboratories brooks no delay. Therefore, the construction of local characteristic

teaching laboratory, which is urgently needed for the training of application-oriented talents, is an important guarantee to realize the training goal of "application-oriented talents" in our university. However, there are not many laboratories with characteristics and advantages, which makes it difficult to fully cover open, innovative and comprehensive experimental projects.

4. Practical Measures for Local Universities to Establish Characteristic Laboratories to Serve Local Economic and Social Development

In order to meet the needs of the application-oriented transformation and development of the university for the training of advanced and application-oriented innovative talents [12], Pu'er University strives to provide first-class experimental teaching and scientific research platform for teachers and students and build a professional ability practice base by improving infrastructure, strengthening operation management, improving teaching and scientific research level and enhancing social service ability. To build a hot area characteristic biological resources development and utilization analysis and test laboratory for the frontier minority areas with weak scientific research strength, and provide a comprehensive platform for the development and utilization of edible resources, characteristic agricultural products, and characteristic medical resources and personnel training. We will strive to build the analysis and testing laboratory into an effective platform with distinctive local and professional characteristics, using knowledge and discovering new knowledge, mastering skilled skills, conducting scientific research, and cultivating teaching and scientific research personnel who meet social needs. Therefore, some practical experience has been accumulated in the construction of local characteristic laboratories, which has certain reference value for the teaching reform of local universities, the training of applied talents and the service of local economic and social development.

4.1. Improve Experimental Practice Conditions and Improve the Quality of Applied Talents Training

Through the construction of hot area characteristic biological resources development and utilization analysis and test laboratory, as a scientific research platform and professional ability practice base project, three test platforms will be built, namely, edible resources analysis and test platform, pharmaceutical resources analysis and test platform and characteristic agricultural products analysis and test platform. The newly built experimental platform can optimize the teaching conditions of experiments, practical training and practice of biology, chemistry, agronomy, food and other specialties, improve the scientific research ability of students and teachers, and improve and strengthen the ability of students to analyze and solve problems with the knowledge they have learned.

4.2. Realize Resource Sharing and Enhance the Strength of Professional Groups

Through the construction of "hot zone characteristic biological resources development and utilization analysis and test laboratory", the teaching of the College of biology and chemistry and the College of agriculture and forestry will be integrated, and the division of departments and departments will be broken, so as to form a discipline professional group with biology, chemistry, food, agriculture and tea as the core, which will significantly enhance the strength of the professional group and lay a foundation for the application for master's degree in the core disciplines of the discipline professional group.

4.3. Form a Good Operation Mechanism and Enhance the Ability to Serve the Local

Further optimize the laboratory management system through the construction of the analysis and testing laboratory for the development and utilization of the characteristic biological resources in the hot area, and establish a good operation system in the cooperation and exchange between the province and the outside, as well as the open operation and management of the scientific research projects of teachers and students. By focusing on the needs of local economic development and aiming at the development and utilization of local characteristic edible resources, medicinal resources and agricultural product resources, the analysis and testing laboratory has established a research system

with certain characteristics and advantages at home and abroad, obtained a number of research results, and provided strong scientific and technological guidance and intellectual support for the development of local biological industry^[13].

5. Achievements and Benefits of Creating Characteristic Laboratories in Local Universities to Serve Local Economic and Social Development

Pu'er university has improved the overall school running conditions of the university, improved the quality of application-oriented personnel training, served the local economy, achieved leapfrog development, and played a leading and exemplary role by building a laboratory for analysis and testing of the development and utilization of biological resources with characteristics in hot areas.

5.1. Improvement of Experimental Teaching Conditions

After the establishment of the characteristic biological resource development and utilization analysis and testing laboratory in the hot area, it will become an advanced experimental platform for supporting the scientific research and practical ability of teachers and students in the same universities in the province. It can not only meet the urgent needs of experimental teaching for undergraduate majors such as biology, chemistry, food quality and safety, agronomy and tea science, but also promote the reform of practical teaching system, improve the level of running a school, and promote the construction and large-scale development of the shared platform for the majors such as biology, chemistry, agriculture, tea science and food quality and safety. Each year, it provides more than 1400 students with practical teaching and scientific research needs, 30 new training projects, and 84000 trainees. It can also build a basic experimental platform necessary for scientific research, provide the basic conditions necessary for scientific research, meet the analysis and testing requirements of general scientific research, promote the scientific research level of the university to a higher level, provide further source power for the improvement of teaching level and the deepening of knowledge updating through the improvement of scientific research level, and basically meet the scientific research needs of teachers and students.

5.2. Highlight Discipline Characteristics

The implementation of the construction of the analysis and testing laboratory will build three experimental platforms, including the edible resources analysis and testing platform, the pharmaceutical resources analysis and testing platform and the characteristic agricultural products analysis and testing platform. It will be conducive to the further development of biology, agronomy, chemistry, food and other disciplines in Southwest Yunnan. Teachers and students of the university can make full use of the regional advantages and characteristics and cooperate with the development of local biological industry in Pu'er to carry out research on biological resources such as Dendrobium, Bletilla, Pu'er tea and Chonglou. Promote the improvement of students' professional practice ability and innovation ability, enhance teachers' scientific research ability, promote the application-oriented transformation of the school and the leapfrog development of subject characteristics, and narrow the gap with other universities in the province.

5.3. Enhance the Ability to Serve the Local Economy

Pu'er university is located in the southwest of Yunnan Province, which is rich in biological resources. Due to the backward scientific research conditions, the development of biological resources is unreasonable and the utilization rate is low. After the completion of the analysis and testing laboratory with local characteristics, it will be able to use its platform facilities to carry out extensive school enterprise cooperation, establish a school enterprise and school government cooperation base, and cultivate high-level technical personnel in the development of biological resources urgently needed in the region that "can go down, stay and use". Open analysis and testing laboratory platform to provide testing services to the society. Focusing on the characteristics of the local biological industry, giving play to its technical advantages, it has become a product testing platform for enterprises and helped enterprises solve product quality problems.

6. Conclusion

Universities undertake the three major tasks of talent training, scientific research and social service. The characteristic laboratory of local universities is an important infrastructure for discipline construction, scientific research and talent training. It plays an important role in condensing and cultivating excellent academic teams, producing high-level research results with local characteristics, and serving local economic and social development. Pu'er university is located in the southwest of Yunnan Province, which is rich in biological resources. By building a special biological resources development and utilization analysis and testing laboratory in the hot area, it can not only cultivate advanced technical personnel in the area of biological resources development, but also provide professional services for enterprises and society, and promote local economic and social development.

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