

Thoughts on the Development Planning of Scientific Research Platform in Local Colleges and Universities

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Abstract—At present, there are still some problems in the development of scientific research platforms in local colleges and universities, such as emphasizing the construction of projects rather than construction, repeated construction, the construction of some scientific research platforms have names, but they have no practical significance, and the lack of overall planning for the development of scientific research platforms. Because of the limitation of the science and technology resources in the local universities, the construction of the scientific research platform of the local colleges and universities should pay more attention to the development planning, not only in combination with the national science and technology development strategy, the reform of the scientific and technological system of the provinces and cities, but also in combination with the development and orientation of the university, the subject construction, the conditions and advantages of the university itself, and fully consider the industry market demand and academic training requirements to develop the scientific research platform.

Keywords—local colleges and universities; scientific research platform; development planning

I. INTRODUCTION

The scientific research platform of colleges and universities is an important support for colleges and universities to carry out scientific research, subject construction, talent training and the transformation of scientific and technological achievements. At present, the scientific research platform of local colleges and universities in our country mainly includes the basic research platform based on the key laboratories at all levels, the applied research platform based on the engineering (technology) research center and the scientific and technological service platform based on the transformation and transfer institutions of various scientific and technological achievements, and so on. In 2010, the Ministry of Education pointed out in the outline of the National medium-and long-term Education Reform and Development Plan (2010-2020): "strengthen the construction of key scientific research and innovation bases and scientific and technological innovation platforms in colleges and universities." With the release of the outline of the National medium-and long-term Education Reform and Development Plan, in recent years, the scientific research platforms of local colleges and universities have developed rapidly. By the end of 2018, there were 6843 scientific research platforms approved by the higher competent departments in local colleges and universities, the number of personnel engaged in research and

development was 69137 person-years, the number of scientific research projects was 110683, the number of graduate students was 172717 [2], 3797 [3] more than that in 2009, the growth rate was as high as 125%. The construction of scientific research platform shows a strong development trend and plays an important role in the scientific and technological innovation system of colleges and universities.

However, at present, there are still some problems in the development of scientific research platforms in local colleges and universities, such as emphasizing the construction of projects rather than construction, repeated construction, the construction of some scientific research platforms have names, but they have no practical significance, and the lack of overall planning for the development of scientific research platforms in local colleges and universities. Due to the limited scientific and technological resources of local colleges and universities, the construction of scientific research platform in local colleges and universities should attach importance to development planning, not only with the national science and technology development strategy, provincial and municipal science and technology system reform practice, but also with the university development orientation, discipline construction, colleges and universities own conditions and advantages, fully consider the industry market demand and talent training requirements to develop scientific research platform.

II. MAIN PROBLEMS OF THE DEVELOPMENT OF SCIENTIFIC RESEARCH PLATFORM IN LOCAL COLLEGES AND UNIVERSITIES

A. Pursuing the Quantity Unilaterally, and Emphasizing the Construction of Projects Rather than Construction

Because most of the local colleges and universities are newly-built colleges and universities that merged and upgraded after 1999, in the process of the rapid development of the school, under the pressure of the development index of the school scientific research platform, they often pursue the quantity unilaterally, temporarily piece together the scientific research team and scientific research resources, and apply for what scientific research platform can be obtained. After the application for the scientific research platform is approved, it is also put into a new round of application of scientific research platform, and the construction of the connotation is ignored, which leads to the failure of some scientific research platforms to pass the acceptance of experts, and the

construction of which cannot be realized, and it becomes a problem platform for local colleges and universities, and it is difficult to play the role of scientific research platform, subject construction and talent cultivation.

B. The Phenomenon of Repeated Construction Is Serious

The lack of planning for the development of scientific research platforms in some local colleges and universities, the existence of national or provincial platforms in the same specialized field, and the application for research platforms at the provincial or municipal level with similar research directions have resulted in the construction of research platforms at multiple levels in the same research direction in the same specialized field. The repeated construction of the scientific research platform not only distributes the research power and the resource advantage, but also cannot give full play to the role of the similar scientific research platform after the completion of the construction, and is separated from the objective and practical development needs, and the innovation of the scientific and technological achievements of the local colleges and universities is more and more beneficial.

C. Some Scientific Research Platforms Have Names, But They Have No Practical Significance

Due to the relative shortage of human resources in some local colleges and universities, many scientific research platforms often do not have exclusive venues and full-time personnel, and the phenomenon of hanging several scientific research platform brands on the same site is more common. It is also common for one person to be in charge of multiple scientific research platforms and one to participate in multiple scientific research platforms. When the scientific research platform faces assessment, it is also a temporary piecing together related scientific research results to deal with it, resulting in many teachers without a sense of belonging to the scientific research platform. The research on the scientific research platform is limited to the name of the company, and the research team and the scientific research platform which are not really forming the scientific research direction are not really formed, the research direction of the research platform is loose, the research direction of the research platform is not condensed, the research characteristics are not more, and the construction of the scientific research platform has no practical significance.

III. THOUGHTS ON THE DEVELOPMENT AND PLANNING OF THE SCIENTIFIC RESEARCH PLATFORM IN THE LOCAL UNIVERSITIES

A. Actively Responding to the Scientific and Technological Development Policies of the Country, Provinces and Cities and the Spirit of Scientific and Technological System Reform to Develop Scientific Research Platforms

1) *Actively responding to national, provincial and municipal science and technology development policy development research platform:* The policy of scientific and technological development of the state and provinces and cities is the general environment, background and direction.

Colleges and universities should actively interpret the outline of the 13th five-year Plan of the National Economic and Social Development of the people's Republic of China, the Strategic outline of National Innovation-driven Development, and the 13th five-year Plan for National Scientific and technological Innovation. To clarify the development train of thought, development goal, key technological development direction, key tasks and safeguard measures for social development in the field of science and technology during the 13th five-year Plan period, it is needed to actively implement the 13th five-year Plan for Scientific and technological Innovation for Social Development (National Science Development Society (2016) No. 404), and firmly establish and implement the five major development concepts of "innovation, coordination, green, openness, and sharing," adhere to the guidelines of the "Independent innovation, focus on, support development, lead the future". Facing the forefront of science and technology in the world, facing the main battlefield of economic and social development, facing the major needs of the country, focusing on building a healthy China, beautiful China, safe China, and implementing the strategy of innovation-driven development. The 13th Five-Year Plan for Science, Technology and Innovation for Social Development (No.404) states:" Focusing on the strategic needs of people's livelihood improvement, industrial upgrading, national security and sustainable development, it is necessary to focus on biotechnology, population health technology, marine development and protection technology, eco-environmental quality improvement technology, resource efficient development and utilization technology, global climate change response technology, disaster prevention and mitigation technology, new urbanization technology, public safety technology, support technology, and other social development technology areas, strengthen basic research and research and research systems of key technologies, attach importance to original and innovative and innovative and independent and advanced technology, and build a practical and controllable technology suitable for our national conditions. " The university should make clear the key scientific and technological development direction of the country's attention, focus the national strategy and the economic and social development important demand, adhere to the principle of the "People's livelihood first, people-oriented", closely surround the vital interests and urgent needs of the people, combine the scientific and technological innovation with the improvement of the people's livelihood well-being, The scientific and technological progress will benefit the people and the scientific and technological achievements benefit the people.

2) *Actively responding to the spirit of scientific and technological system reform in the country, provinces and cities, and develop scientific research platforms:* Since the reform and opening up, in order to better promote the development of scientific and technological innovation, China has carried out many reforms in the scientific and technological system. In 1985, the state issued the Decision of

the Central Committee of the Communist Party of China on the Reform of the System of Science and Technology, and the reform of the scientific and technological system was fully launched. Since the 18th National Congress of the Communist Party of China (CPC), with the in-depth implementation of innovation-driven development strategy, the reform of science and technology system has been deepened in an all-round way. In September 2012, the CPC Central Committee and the State Council issued the Opinions on Deepening the Reform of the Scientific and Technological System and Speeding up the Construction of the National Innovation System, which states that "the ability of scientific research institutes and institutions of higher learning to serve economic and social development should be improved" [5]. In 2015, the China-run Office issued and issued the Implementation Plan for Deepening the Reform of the Science and Technology System, and pointed out that it is important to "Speeding up the classification and reform of scientific research institutes and establishing and perfecting the system of modern scientific" the reform of the science and technology system during this period, and make substantial progress in some important fields and key links, and present a new situation of comprehensive promotion, multi-point breakthrough and development in depth. [6] The development of scientific research platform in colleges and universities should emphasize the development of scientific and technological innovation, the transfer and transformation of scientific and technological achievements, and the ability to serve the economic and social development, and should actively develop the scientific research platform that can promote the development of scientific and technological innovation and the application of scientific and technological achievements.

B. To Closely Surround the Development and Orientation of the Colleges and University, the Subject Construction and the Development of the Scientific Research Platform of the University's Own Conditions and Advantages

1) Developing scientific research platform closely around the development orientation of colleges and universities: The development orientation of colleges and universities is the basis and forerunner for a university to formulate development strategy, carry out effective management and realize its own characteristics, is the struggle goal and action program of all members of colleges and universities, and is also the direction of continuous progress and effort of colleges and universities, which is directly related to the formulation of talent training objectives and specifications in colleges and universities. [7] If the development orientation of the university is neglected, the goal of blindly pursuing its own characteristics in the construction of scientific research platform will lead to the multi-path and missed the development opportunity in the fierce competition in colleges and universities. According to the law of the development of education, the state requires that colleges and universities have their own development and positioning. The 2010

outline of National medium-and long-term Education Reform and Development Plan (2010-2020) and some opinions on improving the quality of higher Education issued by the Ministry of Education in 2012 emphasize the need to "promote the characteristics of colleges and universities" [8] and "emphasize the requirements of classified development" [9]. At present, the classification of Chinese universities can be divided into three categories: research universities and applied research universities. Before developing the scientific research platform of local colleges and universities, it is necessary to first make clear whether their own development orientation is a research university or an applied research university with the combination of the two. Research university refers to putting academic research and scientific and technological innovation in the first place, emphasizing academic, comprehensive and frontier, mainly focusing on high-level personnel training and scientific and technological research and development, mainly a kind of key colleges and universities such as the national "985". Local colleges and universities are mainly applied universities, technical universities. Applied university refers to the undergraduate colleges and universities which put the application in the first place, mainly focus on the undergraduate education, focus on the word "application", train the high quality applied talents with strong social adaptability and competitive ability, combine the local characteristics closely with each major, and pay attention to the cultivation of students' practical ability. Therefore, the research platform construction of the research university emphasizes the high-end and deep-reaching of the academic research, and contacts the world's top technology. The construction of scientific research platform of applied universities pays attention to the application of technology, the cultivation of applied talents and the service of local economic development.

2) To closely surround the development and development of scientific research platform of the subject construction of the university: Subject construction is the key to enhance the core competitiveness of universities, and scientific research platform is an important support for the subject construction of local colleges and universities. Therefore, the development of scientific research platform should closely revolve around the subject construction of colleges and universities. Most of the local colleges and universities are applied colleges and universities, the subject construction is mainly guided by the practical problems in the development of regional economy and society, the direction and research field of subject construction must be highly focused, the characteristics must be condensed, and the advantages must be highlighted. " Subject construction needs to constantly reflect the characteristics of application, industry and region, combined with its own school conditions, carry out applied technology research as the basic direction of subject construction, formulate different subject construction objectives, tasks and training models, pay attention to the construction of subject team with both academic ability and practical background,

and strive to build innovation and practical subject platform with industry and enterprises." [10] Therefore, the construction of scientific research platform in local colleges and universities should first make clear the orientation and train of thought of school subject construction, take applied technology research as the basic research direction, and pay attention to building innovation and practical scientific research platform with industry and enterprises. Universities should not follow blindly, but should embody the direction and research field of discipline construction as the support of subject construction. For example, Fuzhou University strengthened the subject construction of industrial catalysis and photocatalysis, developed the scientific research platform closely around the subject construction, established the National Engineering Research Center of Chemical Fertilizer Catalyst of the National Development and Reform Commission in 1996, established the National Environmental photocatalytic Engineering Technology Research Center of the Ministry of Science and Technology in 2009, and set up the State key Laboratory of Energy and Environmental photocatalysis, a state key laboratory of energy and environmental photocatalysis, jointly established by the Ministry of Science and Technology in 2013.

3) *To develop scientific research platform in close combination with the conditions and advantages of colleges and universities:* Compared with the subordinate colleges and universities, the local colleges and universities are relatively scarce in all aspects of resources, the foundation of science and technology in the field of traditional disciplines is relatively weak, and the development level of science and technology is far from keeping up with the subordinate colleges and universities with a long history and strong scientific research teams. However, the local colleges and universities have the advantages of local resources, and often have the local characteristics of the industry and technology, and the teaching staff. Therefore, local colleges and universities should combine geographical advantages and give full play to their own conditions and advantages to develop scientific research platform. For example, Fujian normal University actively brought into play the geographical advantages of Fujian and Taiwan close at hand and the advantages of discipline construction of Fujian and Taiwan, established Fujian normal University Fujian and Taiwan Regional Research Center in 1999, and was approved by the Ministry of Education in April 2001 to jointly build a key research base of humanities and social sciences in colleges and universities, based on the cultural research of Fujian and Taiwan, and has achieved fruitful research results over the years. Among them, because of geographical and historical reasons, Fujian and Ryukyu communicate most closely, and the research center takes the Sino-Ryukyu Relations Research Institute as the most characteristic, which is widely concerned by the academic circles. For example, taking advantage of Quanzhou as the starting point of the ancient Silk Road, overseas Chinese University established the Maritime Silk

Road Research Institute of overseas Chinese University in 2014. The overseas Chinese University, the Asia-Pacific and Global Strategic Research Institute of the Chinese Academy of Social Sciences, the China News Agency, the overseas Chinese Affairs Office of the Fujian Provincial people's Government, the Fujian Federation of Social Sciences, and the Fujian Academy of Social Sciences have also achieved fruitful research results. Others, such as the Fujian Social Science Research Center of Minnan normal University, the Fujian Social Science Research Base of Quanzhou normal University, the Fujian Social Science Research Center of Minjiang University, the Fujian Social Science Research Center of Fujian Provincial Social Science Research Base, and the Central Soviet District Research Center of Fujian University Humanities and Social Science Research Base of Longyan College, The she nationality Culture Research Center of Fujian Province Social Science Research Base of Ningde normal University is the embodiment of developing scientific research platform according to the conditions and advantages of colleges and universities.

C. Taking Serving the Society as the Starting Point, Fully Considering the Market Demand of the Industry, Serving the Local Demand and the Requirement of Personnel Training, and Developing the Scientific Research Platform

1) *Fully considering the market demand of the industry and serve the local demand to develop the scientific research platform:* In order to promote the common development of local colleges and universities and regional economy, school should combine the needs of local industries, build a scientific research platform for deep cooperation between universities and enterprises, strengthen the construction of scientific research platforms, and promote the development of local industrial agglomeration. School should take the actual needs of local economic and social development as the main line to establish the goal of running a school, persist in embodying the local characteristics of colleges and universities, and realize the coordinated development with the regional economy and society in which colleges and universities are located. The fundamental task of the construction of applied university scientific research platform is the research and development and innovation of applied technology. The construction and development of scientific research platform must combine with its own history and development reality, carry on the extensive investigation and analysis to the local regional economic development, take meeting the local demand, serving the local economic and social development as the fundamental starting point, taking the innovation achievement output, solving the social practical problem as the guide, reasonably positioning. Accurate condensed scientific research platform development advantages and characteristic direction. The development of scientific research platform should be combined with market demand, take solving the practical problems of production and life as the fundamental goal, embody the service area, and make the

scientific research platform become an important base for the industrialization of scientific and technological achievements and a power station for promoting regional development. Taking Anqing Normal University as an example, Anqing Normal University revolves around the local leading industry of petrochemical industry, based on the positioning of Anqing City as an important new chemical material industry base in China, and with the help of the Innovation ability Promotion Plan of Colleges and Universities ("2011 Plan") and the construction of industrial transfer demonstration area in Wanjiang City Belt, through the construction of optical, electrical, magnetic functional complexes and nanometer complexes in Anhui key Laboratory, Anhui optical and electromagnetic functional materials provincial laboratory, and petrochemical new materials collaborative innovation center and other institutions, focus on building petrochemical science and technology innovation platform. The university has actively established long-term cooperative relations with local enterprises such as Anqing Petrochemical Company and Tongling Nonferrous Metals, actively carried out the transformation of achievements, and provided technical support for the development of local enterprises. [11]

2) *Fully considering the requirements of personnel training and developing scientific research platform:* The scientific research platform of local colleges and universities plays a great role in the cultivation of talents. Most of the local colleges and universities are applied colleges and universities, and the scientific research platform of applied colleges and universities should widely become the innovation demonstration base of graduate students and the teaching practice base of undergraduate students. The service orientation of applied undergraduate colleges and universities is mainly to serve the local or regional economic and social development, the talent training is to train the quality applied talents as the goal, the employment is mainly to the production, the management, the service line employment, the talent training mode and the way, pays attention to the practice teaching and the industry-university-research cooperation education. In October 2015, the Ministry of Education, the State Development and Reform Commission and the Ministry of Finance issued the guiding opinions on guiding the Transformation of some Local Colleges and Universities to the Applied Type. The guiding opinions clearly put forward that the idea of running an applied university is to serve the local regional economic and social development, the important way to train talents is the integration of industry and education, the cooperation between schools and enterprises, and the goal of talent training is The key point of talent training is to enhance students' employment and entrepreneurship ability, the talent training mechanism is to establish the cooperative development platform of industry and enterprise, and the talent training mode is the training mode of applied technical and skilled talents. [12] Therefore, it is necessary to accurately grasp the real-time demand for talents in regional

economic and social development, embody local characteristics, strive to train talents for local development, and provide scientific and technological innovation and social services around the actual needs of local economic and social development, which has become the driving force of local economic and social development.

IV. CONCLUSION

In a word, local colleges and universities should focus on the running orientation of the local application-oriented high-level universities with distinct characteristics, the direction of the research, the cultivation of the scientific research team and the promotion of the cross-cutting of the subject, and the construction of a number of high-end scientific research platforms. The high-level scientific research achievements of a group of active service local economic and social development have been promoted and the core competitiveness and contribution degree of the science and technology are greatly improved.

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