The Exploration of Integrated Practice Base Construction of “Industry-University-Research” to Cultivate High Quality Postgraduate

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Abstract. This paper explains and explores through the establishment of integration of industry-university-research and practice base, university and society joint training the postgraduate as a kind of combine theory study and practice of the new education pattern, change the previous traditional closed pattern of postgraduate education, improve the innovation ability and practice ability of postgraduate and help to improve the graduate student’s comprehensive quality and ability. The establishment of the integration of industry-university-research and practice base is giving full play to the advantages of university disciplines and talents, help enterprises to improve the level of technology and management, realize the service society, and as the effective ways to promote economic development.

Introduction

High levels of postgraduate cultivation of talents is one of the landmark work of University Teaching towards comprehensive research university, the development of science and technology in our country determine the guidelines in the future 15 years work of science and technology policy is "independent innovation, key across, support development, leading the future" [1].

In the aspect of industry-university-research combination abroad, there are many do successful example is worthy of reference, such as the Britain in the 1970s by the trade and industry ministry issued the "Britain's national innovation system", encourage enterprises to work closely with colleges and universities, and explore education and scientific research institutions, enterprises and government industry-university-research collaborative innovation model, and committed to create a new dynamic national innovation system. Cultivate a group of high level creative talents, promoted the development of science and technology and the prosperity of economic and social, also make the Cambridge, Oxford University and other famous universities in cultivating students and university of science and technology innovation to keep lasting vitality.

Domestic with Peking University and the Hong Kong University of science and technology jointly founded by example of the PKU-HKUST, it has become an open laboratory oriented application, industry, innovative. Industry-university-research production base rely on outstanding scientific research, teaching and talent resources with Beijing University and Hong Kong University of Science and Technology, engaged in the high level talented person
education training and applied technology research and technology services. In application and industry oriented project research and development, the transformation of scientific research achievements and product hatched at the same time, the formation of key issues and the strength of the solution have the commonness of forward-looking, become the core competitiveness of have a collection of industry-university-research for the integration of research and development platform and applied research and development laboratory, and obtain the Shenzhen science and technology innovation first place in college and Shenzhen natural science award, etc.

From the above example show that through the establishment of "integration of industry-university-research" postgraduate innovation ability cooperation system, is beneficial to the exploration and practice of graduate student training mode and system [2]. To explore the teaching of graduate education in the new period of operation management and quality control systems and mechanisms, methods and means, under the new situation, provide the postgraduate innovation entrepreneurship education [3]. Postgraduate teaching reform and practice of management is a kind of effective promote for the local colleges and universities.

The Integration of Practice Base Construction to Take the Following Measures

The Feasible Mechanism of Management and Organization and Leadership

Establish perfect the organization of education bases, and set up the office of education bases, teaching management, teacher management office, the project management committee and office teaching committee, etc. Among them, university-enterprise cooperation committee to be responsible for the formulation of teaching quality evaluation standards and evaluation of teaching quality, and the office is responsible for the education practice base of the daily operation management, information release and the external liaison. Teaching management office responsible for the formulation, implementation and evaluation of graduate student practice program and so on. The teacher management office is responsible of education bases teacher’s employment, management, evaluation and the engineering practice of the young teachers training, etc. Practice teaching reform with the project management office is mainly responsible for filling and management of the project. Teaching committee is responsible for the engineering practice course system and teaching content of the construction work, to carry out the daily teaching and communication.

Operational Work Running Mechanism

Schools and enterprises in both businesses and schools collaborative internal communication through a variety of means and channels, combination of school and enterprise practical education off-campus practice base on the performance of the work to establish operable mechanism, so that all units within the department to understand the students and young teachers in engineering practice and training purpose and meaning, and emphasizing the practical education of graduate students and young teachers from ideology, really up and running.

Good Service Guarantee Mechanism

Mainly related to Marine chemistry engineering graduate program revision, practice curriculum settings, improvement of the syllabus, the teaching method reform, practice course teaching material compilation and so on, to ensure that the training system on raising the graduate engineering practice ability and innovation ability.
Reasonable Evaluation Mechanism

Rational evaluation system will be beneficial to the engineering practice training effect. During the construction will hear many opinions, including the cultivation of graduate students practice standards and examination requirements, young teachers exercise engineering assessment method, engineering training project reporting procedures, graduation thesis (design) subject reporting procedures, graduation thesis (design) evaluation method and so on, to form a complete set of perfect evaluation system.

University-enterprise cooperation committee membrane to assist practical education base and to review the guide teachers; Practice education base together with the school would evaluate the students in the enterprise training quality during the period of learning.

Inclusive and Open Sharing Mechanism

Through the practice of school education base, resource integration, prompting interactive resources, technology, management and cultural infiltration, training for social production, construction, service, management and front line personnel. The off-campus practice education base as a link, forming the province universities and enterprises industry, the sharing of resources in marine technology, energy and chemical mechanisms of joint training of senior technical personnel, practice conditions, management mechanism between colleges and universities, and to achieve colleges and universities in the province is open to accept marine, food, chemical students, young teachers to study enterprise and education, eventually the two sides to achieve a win-win.

The Role in Promoting the Development of Base

From the perspective of the actual situation of postgraduate education in our country, the Marine reserve talents mainly concentrated in the "fishing" and "ship" the two professional directions, the profession of Marine involved graduate students is very lack, and Zhejiang University of Technology Integration Industry-University-Research base is a useful attempt to make up for postgraduate training of the short board.

Both parties choose their advantages of scientific research projects, introducing graduate practical training system, such as ocean institute in the research of national fund key projects, national "863" project part content moved into the graduate practice base; Enterprises, research institutes, which specializes in marine management and sea detection, analysis and other research projects included in integrated practice base, rich graduate teaching plan and task of graduate student training, graduate thesis. Take advantage of the introduction of the project, sharing, leading graduate teaching level improved, so have integrated practice base of "science combined, open culture, complex innovative" features, implementation of a Marine Chemistry and Chemical Engineering Graduate Education to "water (desalination and comprehensive utilization)", "technology (Chemistry)" as the core, while covering the ocean water chemistry and materials science and technology, marine environmental chemistry and analytical techniques, geochemistry and marine life, so students become a "know basis, understand the application, understand the practice, know better and innovative" high-level talent.

Integration projects relying on Marine Chemistry and Chemical Engineering, Zhejiang University key disciplines, "Chemical Engineering and Technology" State Key Laboratory of Zhejiang Province, the most important disciplines and Green Chemistry (foster) basis,
membrane separation and water science and technology center (provincial collaborative innovation center platform), relying on chemical and postgraduate training base chemical industry of Zhejiang ocean University under construction, the campus learning platform for students to acquire the necessary knowledge and lay a good foundation.

Enterprises choose Marine Aquaculture Research Institute of Zhejiang Province (Wenzhou), both inside and outside the province well-known scientific research institutes and manufacturing enterprises nature of the unit, this learning platform for students to understand the community's direct knowledge for industrial innovation process, expansion graduate knowledge, expanded their engineering knowledge, practical skills, a wealth of knowledge content.

The Method of Integrated Practice Base Construction of Industry-University-Research Based on the Marine Economy in our Province

Around ocean chemistry and chemical engineering degree program goal of building contact foreign enterprises and institutions in the province, closely fit the goals of sustainable development in our province resources development and utilization of marine chemistry, marine environmental protection and marine economy, marine chemistry and chemical engineering graduate students to master the theoretical and new technologies, research and desalination, direct use of seawater, seawater chemistry resource extraction, development and utilization of marine energy, science, technology and engineering problems of the marine environment and the corrosion protection, the development of new theories of marine chemistry and chemical engineering, new methods and new Practical application of cutting-edge technology combined with culture base framework.

Combining Study and Unification

Closely integrated marine economic development objectives of the talent market outside the province related to the sea and talents training college depth research system, establish and improve the industry-university-research integration postgraduate personnel training curriculum, in order to learn to use binding, unity of knowledge as the guiding ideology by addressing desalination, membrane materials research and development, direct use of seawater, seawater chemistry resource extraction, development and utilization of marine energy, marine environment corrosion and protection of the reality of science, technology and engineering problems, the development of marine chemistry and chemical engineering graduate education new theory , new methods and new technologies, a high level of professional training through research integration, accelerate the construction of teaching model to meet the social need of ocean chemistry and chemical engineering professionals.

Resource Sharing, Win-win Cooperation

To train outline national graduate, postgraduate training programs in ocean chemistry and chemical engineering graduate education discipline of Zhejiang University requirements as the starting point, the integration of the actual needs of enterprises and institutions, to strengthen the postgraduate double social need of engineering innovation and educational innovation and school academic theory Education, in the joint efforts of teachers and tutors enterprises and institutions, the research will continue to improve graduate training mode of cooperation, open to the province and outside the school, to share resources, to strengthen
graduate research training mechanism innovation in practice, for the new era graduate education to provide effective new ideas.

The Key Problems to Solve the Integrated Practice Base Construction

How to effectively integrate Industry-University-Research and development so that students practice the theoretical knowledge and business and product realization in school merged unified

How to strengthen the close cooperation with scientific research platform outside school advantage among enterprises, so that postgraduate training and better fit the direction of socio-economic development, achieve better innovation ability

Summary

Construction of "Industry-University-Research" integrated practice base "Cooperation Training Mode of Graduate Education Teaching, to provide a practical real learning platform for students. Enables students in the "Industry-University-Research" integrated scenarios of ocean chemistry and chemical engineering disciplines comprehensive observation and in-depth understanding, deepen graduate for chemical materials, water treatment equipment operation, understanding and mastery of design, and more, is the real social understanding and feelings. Ensure that ocean chemistry and chemical engineering students and other professionals associated graduate high levels learning experience, and expected the construction of the "Industry-University-Research" integrated practice base so that the overall quality and comprehensive ability of students to get exercise and improve, better improve the academic level and marine science graduate basic quality.

Specifically the following results:
(1) "Industry-University-Research" integrated practice base helps to develop students’ ability to innovate, to create a training graduate students awareness of innovation, creativity and innovation ability strong academic atmosphere, effectively enhance students’ practical ability.
(2) Cooperation help to promote graduate "engineering applications, social applications" and to promote the transformation of scientific research of teachers, strengthen the school social service function.
(3) Practice education base can be opened and shared within and outside the province to other universities colleges and universities, and play an exemplary role and radiation.

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