

# Cultivation of Postgraduate Abilities from the Perspective of Enterprise Needs

Minna Sun<sup>1</sup>, Lei Qin<sup>1</sup>, Yuanfei Xue<sup>2\*</sup>

<sup>1</sup>Beijing Key Laboratory for Sensors, Beijing Information Science & Technology University, Beijing 100192, China

<sup>2</sup>Shenzhen Polytechnic University, Shenzhen 518055, Guangdong Province, China

\*Corresponding author: Yuanfei Xue, [xueyuanfei@szpu.edu.cn](mailto:xueyuanfei@szpu.edu.cn)

**Copyright:** © 2024 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

**Abstract:** When cultivating the comprehensive abilities of postgraduates in universities, to prevent disconnection from the market and ensure the effectiveness of talent output, it is necessary to innovate and reform the methods of postgraduate ability cultivation from the perspective of enterprise talent demand. This study first clarifies the research approach, followed by a detailed examination of specific strategies for cultivating postgraduate abilities. It is hoped that the research findings can provide valuable insights for relevant stakeholders, highlighting the significance and value of the study.

**Keywords:** Enterprise demand; Postgraduate cultivation; Cultivation strategy; School-enterprise cooperation; Quality evaluation of cultivation

**Online publication:** November 4, 2024

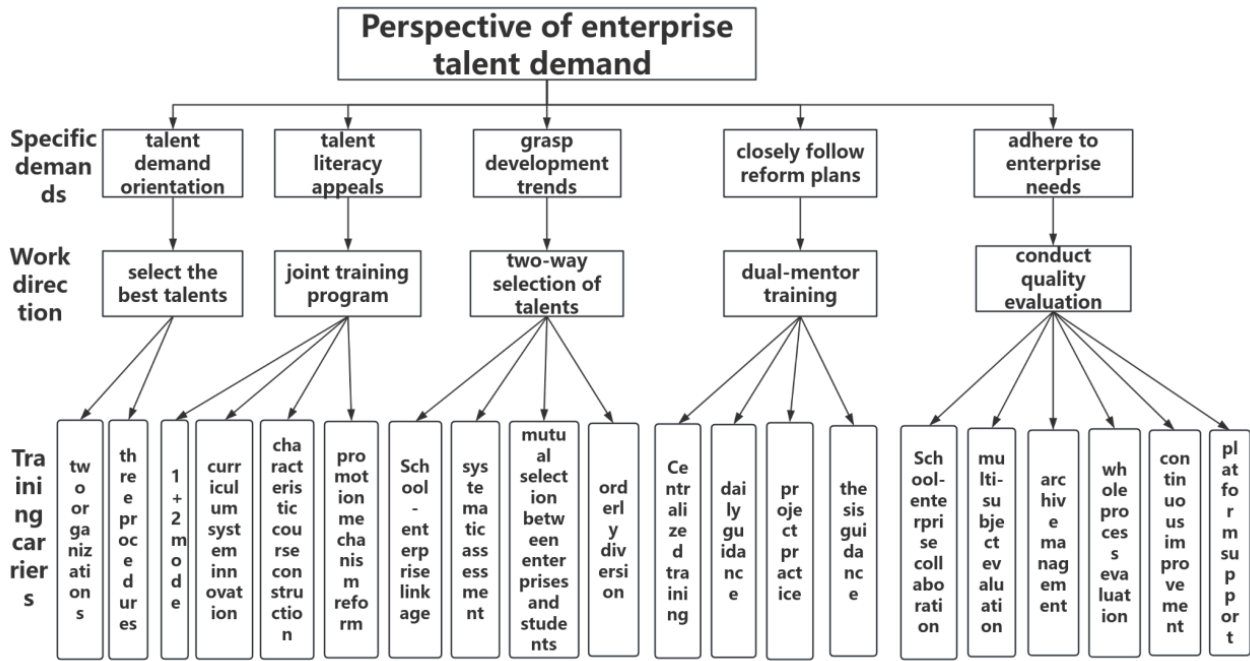
## 1. Introduction

In September 2020, the Academic Degrees Committee of the State Council and the Ministry of Education jointly issued the “Development Plan for Professional Degree Postgraduate Education (2020-2025),” emphasizing the imperative of developing professional degree postgraduate education to meet the needs of high-quality economic and social development. In this context, the author conducted this research to explore how to closely align with enterprise talent demands and cultivate excellent postgraduate talents. The main contents of the research are summarized below.

## 2. Overview of research approach

To enable postgraduate talents to become catalysts for the high-quality development of Chinese enterprises, universities should consider how to better cultivate their comprehensive abilities from the perspective of enterprise talent demand. Firstly, we identify the specific talent needs of enterprises. Based on these needs, we

then define the direction of postgraduate ability cultivation. Finally, we pinpoint the talent cultivation vehicles for school-enterprise cooperation to achieve the expected goals of reform and innovation in postgraduate education. **Figure 1** illustrates the author’s research approach to this topic.



**Figure 1.** Schematic diagram of the research approach for postgraduate ability development paths from the perspective of enterprise talent demand

### 3. Exploring strategies for postgraduate ability development from the perspective of enterprise demand

#### 3.1. Based on enterprise talent demand orientation, school-enterprise collaboration to select the best talents

The postgraduate population represents high-level, precision, and cutting-edge industry talent. When cultivating postgraduates’ abilities, institutions should be guided by enterprise talent demands and collaborate with enterprises to select the best talents for targeted talent output. How to achieve “selecting the best from the excellent” and identify the most suitable talents from the postgraduate population for enterprise needs, providing a basis for precise cultivation through school-enterprise collaboration? To this end, we can approach it from the perspective of person-job fit in enterprise management, creating a talent selection mechanism of “two organizations and three procedures.”

The “two organizations” refer to the establishment of a talent selection working group and an interview expert assessment team. The selection team can consist of administrative staff from both the school and the enterprise, such as the vice president, deputy secretary, the director of the graduate school office from the university, and the human resources minister from the enterprise. They are responsible for promoting the implementation of tasks such as postgraduate selection, organization of registrations, material review, and assessment evaluations. The interview expert team is primarily composed of enterprise experts, supported by

on-campus mentors, to conduct a comprehensive evaluation of postgraduate abilities.

During the “three procedures” selection process, the focus is on three key aspects: qualification screening, comprehensive testing, and interviews. In the qualification screening phase, specific requirements for qualification review are proposed by the enterprise, and students must meet all requirements to proceed to the next selection stage. The comprehensive testing phase involves assessments conducted by the enterprise on areas such as professional knowledge structure and foreign language expression ability. In the final interview phase, a jointly created expert assessment team from the school and enterprise conducts individual assessments, comprehensively evaluating postgraduates’ potential for scientific research and innovation, logical thinking ability, and team organization skills to determine the best candidates for training based on enterprise talent demands <sup>[1]</sup>.

### **3.2. Closely align with enterprise talent quality requirements to optimize joint school-enterprise training programs**

In cultivating graduate students’ abilities in the new era, universities and colleges need not only to emphasize the cultivation of students’ professional abilities but also to focus on the development of their compound abilities. To this end, when optimizing joint school-enterprise training programs, it is essential to closely align with the quality requirements of enterprises when recruiting top talents and carrying out systematic reforms from multiple aspects.

Firstly, in cultivating graduate students, a “1+2” model can be adopted. This model involves students completing elective courses, professional basic courses, and degree courses in the first academic year to consolidate their professional knowledge structure. In the second and third academic years, students mainly engage in specialized course learning in enterprises, carry out professional practices, conduct research projects, and write dissertations, which helps to enhance their comprehensive quality and strength and better integrate into the enterprise culture.

For example, when cultivating top talents, Shenzhen Vocational and Technical University adheres to the talent demand orientation of partner enterprises and promotes collaborative talent cultivation between schools and enterprises. The university actively cooperates with Huawei Technologies Co., Ltd., accurately identifies the talent needs of the enterprise, and cooperates with relevant universities based on this to screen outstanding talents for targeted cultivation. This approach fully leverages the advantages of the “1+2” joint graduate cultivation model.

Secondly, innovation in the curriculum cultivation system is crucial. When enriching the content of graduate cultivation courses, universities and colleges should not only incorporate the core courses for professional degree graduate students organized and compiled by the Academic Degrees Office of the State Council but also have deep exchanges with enterprises. Based on the strategic plan for top talents in enterprises, the demands for talent quality should be integrated into the curriculum.

For instance, in teaching computer science and technology at Beijing Information Science and Technology University, to deepen the school-enterprise cooperation model and promote the cultivation of talents in this field, the university actively cooperates with Inspur Computer Technology Co., Ltd. and signs a strategic cooperation agreement. This not only provides students with rich practical opportunities and accelerates the close integration of the computer industry and academia but also supports the innovation of the graduate cultivation curriculum system in this major <sup>[2]</sup>.

Furthermore, considering the different directions of school-enterprise cooperation and the differences in enterprises' main business, to ensure the cultivation of graduate students and meet the talent needs of enterprises, universities and colleges should timely optimize joint school-enterprise training programs and set up remedial courses for graduate student cultivation.

Finally, to prevent graduate students from becoming complacent and affecting their comprehensive ability improvement, universities and colleges can take joint school-enterprise cultivation as an entry point for reform. They can set up processes such as weekly meetings, monthly summaries, phased reporting, and thematic discussions to effectively motivate students.

### **3.3. Grasping the trend of enterprise innovation and development, and implementing two-way talent selection through school-enterprise collaboration**

The stratified cultivation of graduate students has always been a pain point in school-enterprise cooperation. Due to inadequate implementation of mid-term assessment systems, scientific stratified guidance based on the potential of graduate students has not been achieved. Therefore, when cultivating graduate students' abilities through school-enterprise collaboration, emphasis should be placed on two-way talent selection. By grasping the trend of enterprise innovation and development, and approaching from the perspectives of school-enterprise collaboration, systematic assessment, mutual selection between enterprises and students, and orderly stratification, the expected goals of mid-term assessments for graduate students can be achieved<sup>[3]</sup>.

Firstly, school-enterprise collaboration. When conducting mid-term assessments for graduate students, the traditional single-subject assessment model of universities can be broken, and a new mid-term assessment method of school-enterprise collaboration can be created, allowing relevant personnel involved in the graduate student training stage to participate.

Secondly, systematic assessment. Under the premise of mid-term assessment for graduate students, a comprehensive and systematic evaluation should be conducted from the perspective of enterprise employment, focusing on students' national identity, technical application, social responsibility, information awareness, self-discipline, problem-solving, teamwork, and collective cognition.

Thirdly, mutual selection between enterprises and students. From the perspective of school-enterprise joint education, the graduate student recruitment process mainly focuses on the initial intention selection between enterprises and students, while the mid-term assessment for graduate students is the second intention selection between enterprises and students. At this time, enterprises and students can reach a unified cooperation goal and sign an employment intention letter, which can enhance the mutual trust between enterprises and students, facilitate graduate students' participation in the core technology research and development projects of enterprises, and provide materials for students to write their dissertation.

Fourthly, orderly stratification. Based on the final results of mid-term assessments and systematic evaluations, if some graduate students fail to meet the minimum requirements of the school-enterprise joint training program, the corresponding students need to withdraw from the program and re-select their degree direction. For some students who meet the requirements but are unwilling to work in the corresponding enterprises, they can apply to return to their alma mater for further study or choose their careers, achieving orderly and scientific stratification of graduate students.

For example, Shenzhen Vocational and Technical University has actively signed joint training agreements with many prestigious universities. When carrying out joint training of graduate students, it adopts a scientific

and orderly stratification plan, actively cooperates with high-quality leading enterprises and industrial parks in Shenzhen, and provides many internship opportunities for jointly trained graduate students. As of the end of 2022, 989 master's students and 78 doctoral students have been jointly trained, among which nearly 30% of students have achieved employment in the Greater Bay Area, fully demonstrating the significance and value of carrying out scientific stratification work <sup>[4]</sup>.

### **3.4. Close integration with enterprise innovation and reform plans for dual-mentor training through school-enterprise collaboration**

The cultivation of professional degree graduate students requires the implementation of a dual-mentor system, enabling students to simultaneously learn professional theories and practical skills. To avoid the dual-mentor training system becoming a mere formality, educational institutions need to closely align with enterprise innovation and reform plans, refining the key points of dual-mentor training through school-enterprise collaboration.

Firstly, centralized course training. Apart from the basic educational teaching curriculum jointly developed by the school and enterprise, enterprise mentors should encourage students to utilize their free time to learn relevant micro-courses based on the needs of the research topic, gaining more information about the research, such as enterprise systems, corporate culture, business courses, and research methods. When students conduct research projects in the enterprise, enterprise mentors can organize centralized training to provide support for subsequent research projects.

For example, Shenzhen Vocational and Technical University has continuously deepened the school-enterprise dual-mentor training program. While enhancing the effectiveness of centralized course training, it has actively collaborated with relevant enterprises to establish practical training bases. Through partnerships with BGI, ZTE, and China Mobile, they have co-built the “BGI Biotechnology Training Base,” “ZTE Communication Technology Training Base,” and “China Mobile Information Technology Training Base.” These not only create an environment for centralized training but also provide support for students’ practical learning.

Secondly, professional daily guidance. Under the dual-mentor training mechanism, the enterprise mentor team focuses on knowledge within the relevant discipline or professional field. Combining this with the student’s chosen topics, they selectively impart guidance content, implementing daily guidance on professional content to ensure the overall progress of students’ research projects.

Thirdly, scientific research project practice. Enterprise mentors organize students to participate in specific scientific research projects, integrating graduate students into the enterprise’s research and development (R&D) team. This encourages active communication and exchange with scientific researchers, allowing students to acquire more scientific ideas and research experience through project practice, comprehensively enhancing their learning abilities.

For instance, when cultivating graduate students in computer science and technology at Beijing Information Science and Technology University, to ensure the effectiveness of related scientific research projects under the school-enterprise cooperation perspective, the university and Nantian Information Company jointly established a research center. This center conducts scientific research collaborations on cutting-edge technologies such as intelligent systems and data processing, providing scientific research project support for graduate student training and achieving the expected results of dual-mentor cultivation <sup>[5]</sup>.

Fourthly, dissertation guidance. Graduate students need to rely on the R&D projects jointly undertaken by

their school mentors and enterprise mentors to determine their dissertation research topics and directions. To improve the effectiveness of dissertation guidance for graduate students, a full-process dual-mentor guidance model and project-driven management strategy can be adopted during school-enterprise joint training. This approach starts from topic discussion, proposal defense, periodic inspections, dissertation pre-defense, and dissertation defense, fully leveraging the advantages of the school-enterprise linked dual-mentor training model to achieve graduate student ability training goals from the perspective of enterprise needs.

### **3.5. Adhering to talent cultivation based on enterprise demands, and conducting quality evaluation through school-enterprise collaboration**

To determine whether the final quality of graduate students' ability training meets the expected goals of school-enterprise collaboration, scientific and effective quality evaluation is necessary. To ensure the objectivity and accuracy of quality evaluation for graduate student training, it is important to consistently adhere to the talent cultivation philosophy based on enterprise demands and establish a comprehensive quality management evaluation system. To ensure the effectiveness of quality evaluation, the evaluation system can be structured from multiple perspectives, such as school-enterprise collaboration, multi-stakeholder evaluation, big data archives, comprehensive process evaluation, continuous improvement, and platform support.

Firstly, school-enterprise collaboration refers to deep cooperation between universities and enterprises. They negotiate on the quality evaluation subjects, evaluation indicators, indicator weights, and evaluation criteria for different stages of the graduate training plan, thereby forming a quality evaluation scheme for each stage and aspect of joint training.

Secondly, multi-stakeholder evaluation involves relevant personnel participating in the graduate training plan. They actively engage in the quality evaluation process to ensure that evaluation results are more objective, fair, accurate, and comprehensive. This facilitates the timely identification of deviations in the implementation of the graduate training plan and prompt response measures.

Thirdly, big data archive management involves comprehensively collecting graduate students' basic information, examination results, learning points, project reports, monthly evaluations from mentors, project quality assessments, and work situations during the graduate training process. This is done from the stages of basic training, intensive training, project practice, and summary evaluation, to generate exclusive digital archives for graduate students and provide a basis for subsequent quantitative evaluation.

Fourthly, comprehensive process evaluation aims to refine the joint training evaluation work for graduate students, making the feedback from quality evaluation precise and timely. For example, during the basic training stage, students' academic performance and norms are the focus of assessment. In the intensive training stage, emphasis is placed on evaluating project reports, monthly evaluations from mentors, and project quality assessments. During the project practice stage, the focus is on two aspects: monthly evaluations from project leaders and scientific research defense evaluations.

Fifthly, continuous improvement highlights evaluating the actual situation of jointly trained graduate students at the end of each semester and providing feedback to both school and enterprise mentors. Objective and fair semester evaluations can help graduate students identify gaps and clarify details that need improvement in subsequent scientific research practices, enabling them to continuously address their shortcomings<sup>[6]</sup>.

Sixthly, platform support refers to the establishment of a comprehensive evaluation system by universities and enterprises from the perspective of joint education. This system, empowered by digital information

technology, enables the entire process of graduate student learning to be monitored and quality evaluated.

## 4. Conclusion

In the educational context of expanding graduate enrollment, ensuring the quality of enrollment, teaching, and talent output has become an urgent issue to be addressed in graduate training. In this article, the author approaches the topic from the perspective of enterprise talent demands, explaining how to cultivate graduate students' comprehensive abilities from multiple aspects. The viewpoints presented are supported by relevant case studies, fully illustrating the urgency and necessity of reforming and innovating China's graduate talent cultivation model from the perspective of enterprise demands. In the future, when cultivating graduate students' abilities, it is essential to continuously extend the reach of school-enterprise collaboration, closely align with China's market economic development trends, create a new ecosystem for industry-education-research talent cultivation, and gradually address the imbalance between the supply and demand of high-level talents in the market.

## Funding

This article is funded by the Young Backbone Teacher Support Plan of Beijing Information Science & Technology University (Project No. YBT 202448). This work was also supported by The Project of Construction and Support for high-level Innovative Teams of Beijing Municipal Institutions (Project No. BPHR20220124).

## Disclosure statement

The authors declare no conflict of interest.

## References

- [1] Liu M, Wang Y, Jiang W, He Y, 2024, Exploration and Practice of Industry-Education Integrated Postgraduate Training Mode Oriented by Industrial Demand. *Journal of Higher Education*, 10(8): 34–37.
- [2] Gong L, Huang Q, Liu J, 2024, The Effectiveness, Problems, and Countermeasures of Postgraduate Training in the Context of Guangxi's High-Quality Development Social Needs — Taking G University as an Example. *Higher Education Forum*, 2024(3): 107–110.
- [3] Xie X, Liu H, 2024, Research on the Deep Integration Mechanism of Enterprise Employment Demand in the Context of Supply-Side Structural Reform — Taking the Quality of Sports Talent Training in Zhaoqing Universities as an Example. *Industrial Innovation Research*, 2024(13): 196–198.
- [4] Li Z, Nie S, 2024, Conception of the Construction of a Tripartite Collaborative Postgraduate Base for Universities, Research Institutes, and Enterprises — Taking the Discipline of Safety Science and Engineering as an Example. *Journal of Anhui University of Science and Technology (Social Science Edition)*, 26(1): 98–102.
- [5] Huang H, Chen Y, Wang H, et al., 2024, Construction of a Joint Training Base for Professional Degree Postgraduates — Taking the Training Base for Master's Degree in Mechanical Engineering at Liaoning University of Technology as an Example. *Journal of Liaoning University of Technology (Social Science Edition)*, 26(1): 92–95.

- [6] Zhang X, Chu Z, Shi W, 2024, Strengthening and Effects of Joint Training for Professional Degree Postgraduates in Local Applied Undergraduate Universities. *Journal of Liaoning University of Technology (Social Science Edition)*, 26(3): 93–96.

**Publisher's note**

Bio-Byword Scientific Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.