

# Sharing Resources and Complementing Advantages—Exploring the Mode of Joint Cultivating Innovative Medical Postgraduates across Colleges and Universities

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## Abstract

The joint cultivation of innovative postgraduates between universities and colleges or between universities and medical research institutes is an important initiative to promote the powerful combination, in-depth cooperation, and innovation for both sides. During this period, the postgraduate training system has been improved in multiple aspects through resource sharing and complementary advantages among medical colleges and universities to jointly train high-level innovative medical talents. This article aims to analyze and discuss many issues when establishing the model of joint cultivation of innovative postgraduates across universities and colleges and explore the feasibility of its mechanism, thus providing new ideas for promoting the reform of the medical postgraduate education system, innovation of management mechanism, and improvement of training quality.

## Keywords

Postgraduate Education, Joint Cultivation, Innovative, Resource Sharing

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## 1. Introduction

It is well known that “the competition in the world means the competition for talents”, so training highly qualified personnel has become one of the important strategic choices of developed countries. In the process, the government and enterprises have carried out their duties to lay a good foundation for training highly qualified personnel and provide theoretical and practical guidance for related research. Therefore, the constantly optimized educational model and the prin-

principle of talent training have formed a virtuous circle in the expansion of higher education. In the new economic era with technological change and scientific and technological innovation, the demand for outstanding practical talents is growing rapidly. The original postgraduate education system in China, which focuses on academic research, is struggling to meet the urgent needs of social development (Chu, He, Ou, Ren, & Huang, 2022) and must be innovated. In front of the exposed weaknesses, higher medical education should aim to improve the quality of talent training, fulfill the innovative development of medical education, and realize the transformation from “biomedical science as the main support” to “interdisciplinary collaboration in medicine + liberal art, engineering, science, X as the main support” of the medical model, and cultivate high-level medical talents who can adapt to the new generation of technological revolution represented by artificial intelligence and use interdisciplinary knowledge to solve medical problems (Kuang, 2020). To solve the actual problems of uneven distribution of educational resources between the eastern and western regions as well as between key universities and ordinary universities, the joint cultivation model of resource reassignment and integration and mutual assistance among universities was proposed. At present, there are still some unresolved problems in the practice of joint cultivation of full-time medical postgraduates, especially in the joint cultivation among colleges and universities, which include system imperfection and lack of required resources, leading to difficulty in giving full play to the advantages of mutual assistance. Therefore, it is of profound and urgent strategic significance to find out the problems existing in the joint cultivation of full-time medical postgraduates, constantly adjust and innovate the coordinated operation mechanism between colleges and universities, build a more perfect and sound training quality assurance system, and cultivate innovative inter-disciplinary talents who adapt to society for China.

## 2. Exploration of the Mechanism of Joint Cultivation

### 2.1. Forms of Joint Cultivation Mechanism

University and enterprise cooperation: Jointly cultivate postgraduates by universities and enterprises, which is very common.

University and institute cooperation: Jointly cultivate postgraduates by conducting cooperative scientific research between universities and research institutions.

Cooperation between universities: Include joint cultivation among domestic universities and joint cultivation among foreign universities. The former includes joint cultivation by university cooperation and joint cultivation by tutors.

Ultimately, the goal of every joint cultivation mode is to increase the opportunity for students to study in high-level universities and cultivate their ability to find and solve problems independently by participating in more topic discussions, practice, and thinking, thus improving their scientific research and innovation level.

## 2.2. Joint Cultivation Meeting the Needs of the Educational Landscape

### 2.2.1. Meeting the National Demand for Talent Training

With the increasing demand for high-level talent, pursuing a master's degree has become the dominant option for graduates. However, students trained by the universities of Project 985 or Project 211 (or the “Double First-Class” initiative) cannot fully meet the needs of the national development strategy for talents. According to the *Overall Plan to Promote the Construction of World-class Universities and World-class Disciplines*, the foundation for the construction of first-class universities is first-class disciplines, which requires first-class talents (Qian & Zhang, 2020). The strategy on developing a quality workforce is the first strategy to build a strong and prosperous China, and the scientific research team plays a key role in promoting national strategy and training students for the “Double First-Class Initiative”. For many reasons, the uneven development of medical colleges and varied resources and advantages have become an urgent problem. Therefore, improving the quality of training postgraduates across universities through resource sharing and complementary advantages among medical universities is an effective way to enhance the competitiveness of scientific and technological talents in China.

### 2.2.2. Meeting the Needs of Social and Economic Development for Talents

In recent years, a shortage of quality inter-disciplinary talents with professional knowledge and innovation has resulted in the failure to meet the urgent needs of employers, which reflects that students who graduated from colleges and universities need to have sufficient basic knowledge and a comparable practice level to satisfy social and economic development. The joint cultivation of medical postgraduates includes the construction of a theoretical system, an increase in practical ability, and the improvement of comprehensive quality. Among them, improving practical ability runs through the whole training process, and the level of practice is the core of training. Therefore, in terms of employment, joint cultivation among colleges and universities advances the strategic adjustment of the postgraduate education structure from single academic research to integrated application, so as to better meet the needs of social and economic construction and development for highly adaptable talents and further boost the development of postgraduate training.

## 2.3. Raising the School's Demand for Full Utilization of Resources

Ordinary colleges and universities tend to be limited by problems such as resource shortages, inadequate scientific research conditions, and underdeveloped training mechanisms. Joint cultivation of postgraduates with high-level colleges and universities can obtain more resources to carry out more meaningful and valuable scientific research and experiments, including advanced instruments and devices and quality education. Therefore, the implementation of joint cultivation, reasonable sharing of resources, and complementary advantages are con-

ducive to improving postgraduates' academic ability and scientific research quality. For example, our school has jointly cultivated postgraduate students with Wenzhou Medical University and shared the responsibility and obligation of student training by coordinating teaching resources and performing respective duties. It is demonstrated that joint training can effectively reduce the restriction of regional resource imbalance on talent training and achieve substantial development and progress for colleges and universities.

### **3. Exploration of Implementing the Innovative Dual Tutor System**

#### **3.1. Limitations of Implementation**

The teaching mode of the “dual tutor system” originated at the University of Oxford. Back then, tutors simply acted as “parents” to custody and protect students at school, and the requirements for tutors among colleges were not uniform or clear; based on this, the American tutor system has added a credit system to standardize students' learning attitude and strengthen the management of tutors on students; The tutor system in China was established in 1993, which can be divided into the forming stage, the transition stage, and the mature stage (relatively speaking). China's dual tutor system is now in the mature stage, meaning that there is a clear system to manage the responsibilities and requirements of tutors for students and a complete ideological system for teaching. However, the dual tutor system is still under exploration and improvement without a unified standardization system among universities. Therefore, there are still many problems. For example, the government policy on “dual tutors” has not been implemented; colleges and universities have accepted and implemented the system, while enterprises have not obtained policy details; the guidance direction of tutors inside and outside universities is not coordinated; postgraduates are skeptical about the system (Cui, Li, & Wang, 2022).

#### **3.2. Value and Significance of the Dual Tutor System**

##### **Promoting the In-Depth Combination of Student Training Theory and Innovative Practice**

Students jointly guided by two tutors can deeply integrate theoretical knowledge with practical ability by applying the knowledge to experimental operation. In this way, their overall understanding and mastery of theory and experiment can be improved. Meanwhile, students can feed back the theoretical problems encountered in work and practice, so that they can be solved through teaching and scientific research, such as establishing a human-mouse *Helicobacter pylori* inhibition model through experiments to screen individual chemotherapy plans for patients and exploring immunotherapy by detecting the immune microenvironment. Theory and practice complementing each other help students develop their thinking and ability. In addition, students have access to the School of Medicine's key laboratories, advanced instrumentation, and professional research leadership, combined with a range of topics chosen by students at the

graduate level under the guidance of a teaching tutor. Practical theory is the cross-integration of practical topics. Students are trained in scientific research methods and scientific thinking, guided to participate in various forms of scientific research groups and academic exchanges, and guided to write scientific research papers to make up for students' shortcomings in scientific innovation.

### **3.3. Promote a Win-Win Situation between the First and Second Tutor**

The “dual tutor system” is an active exploration and effective attempt in the education reform of Chinese universities. Students are guided by both on-campus theoretical tutors and off-campus practical tutors to complete academic research and social experience accumulation experiments (Xie, Ning, Zhu, Wang, Xiao, & Liu, 2020). The off-campus practice tutors are often burdened with heavy experimental work, such as designing experiments, teaching experiments, etc., so they are unable to devote all their energy to graduate training. The “dual tutor system” is characterized by the effective reduction of pressure on the experimental tutors, targeted training of students' hands-on and research abilities, and also promotes cooperation, communication and resource sharing among tutors. Teaching tutors will learn about unsolved experimental problems and cutting-edge ideas through experimental tutors, and also carry out research on basic theoretical topics in close conjunction with actual practice to obtain solutions and supplement teaching. The experimental tutors will gain research methods and research experience through the teaching tutors, share the professional laboratory platform of the School of Basic Medicine, and gain insight into the mechanisms of development of difficult experiments that have not yet been solved. At the same time, through joint theoretical-experimental projects between teaching tutors and experimental tutors and joint declaration of scientific research fund projects, we can closely combine and play our respective advantages in medical innovation. The cooperation and mutual benefit of dual tutors is an important motivation for the implementation of collaborative education mechanism.

The cultivation of medical postgraduate education is complex, and the “dual tutor system” involves the cooperation of teaching tutors and experimental tutors, and the “individualized teaching” method should be adopted according to the individual differences of each student. A relatively fixed correspondence and cooperation relationship should be established between the two tutors. After the establishment of the joint cultivation relationship, the experimental tutor should act as the first person in charge of the master's students, and should take the initiative to undertake the work of communication and exchange with the theoretical tutor in addition to completing his or her own cultivation work. Theoretical-practical cross-research projects should be carried out through close communication and cooperation, taking into account the specific reality of the students and developing scientific research topics that lead the frontiers of science

with their respective strengths. While students trust their tutors, their needs and guidance are multifaceted. Therefore, by considering students' learning as the main body and tutors' teaching as the leading one, we can fully mobilize the initiative and participation of graduate students through the communication and interaction between tutors and students, so as to achieve the effect of "1 + 1 > 2", and also continuously inject momentum into the collaborative education of dual tutors (Yue, Zhang, Yan, & Zheng, 2021).

## **4. Improvement of the Protection System to Promote the Healthy Development of Cultivation**

### **4.1. Clarify the Rights and Obligations of Tutors**

The dual tutor system is a key component of joint cultivation and the essence of the entire training process. The cultivation of students' sense of independent learning and their innovative thinking and sound personality are inculcated through the words and subtle influence of their mentors. Research shows that a graduate student who receives frequent mentoring will have a better system of research thinking, a relatively shorter average time to complete a thesis, and more research results and better quality papers. It is necessary to make a good division of tutor responsibilities, to make a good basis of synergy between tutors, to improve the collaborative teaching ability of tutors, and to optimize the tutor team system in the process of implementing the dual tutor system. Timely communication is what should be done between tutors and students to trace the root cause of the problems arising from students in the cultivation process in a timely manner, based on the principle of early detection and early solution, so as to avoid the teaching process from affecting the development of joint cultivation due to inadequate communication (Li, 2022). Tutors should regularly call post-graduate students to attend experimental and dissertation progress debriefing meetings, where each student is required to report on the progress of their respective research and dissertation writing, current problems and next steps in writing. Regular training is provided for tutors to enhance their education of students and to develop their responsibility for them. The University provides certain rewards for accomplished joint trainees together with their tutors through the development of an incentive mechanism.

### **4.2. Addressing Issues Such as Funds and Signatures**

Joint trainees are affiliated to their home university but do not do research at their home university, or are not affiliated to a second university but do research at a second university. Funds for research projects should be provided for students by mutual agreement, to avoid the progress of experiments being affected by a lack of research funds. In addition, the corresponding author of the article should be identified as the first or second tutor. If these issues are not taken seriously and dealt with properly, unreasonable rules and treaties may be enacted by individuals or relevant departments to maximize their own interests.

### 4.3. Establishment of a Feedback Mechanism for Trainees

Organize seminars for groups of co-curricular students in order to understand, on a regular basis, the difficulties of students in this mode of teaching and to build bridges between trainees and tutors. The platform for evaluating the quality of teaching and learning should be improved to take on board a wide range of evaluations and make use of diverse evaluation methods, which should not only focus on supervising and rectifying the various problems that arise in the training, but also ensure that their relevant feedback is followed up. It is beneficial to the long-term development of the students that the training program is adjusted in a timely manner according to the physical and mental health development needs of the trainees to ensure the efficient operation of the joint cultivation.

### 4.4. Clarifying the Mechanism for Rewarding and Punishing Trainees

As the saying goes, a good system must also rely on a sound operational mechanism to ensure its implementation. The process of running joint cultivation also requires a reasonable system of rewards and sanctions. On the one hand, timely material or spiritual rewards are given to postgraduates for excellence in thought and action, so that the combined effect of goal motivation and the spirit of example can better stimulate students' inner potential and make them motivated to forge ahead to new heights. Likewise, if a postgraduate student is negligent in his/her study and life, for example, if he/she is not motivated to have fun and cause bad influence, he/she should be criticized, educated or punished according to the relevant university regulations. The joint cultivation process may also be terminated in the event of insubordination or serious disciplinary offences. The system of rewards and punishments is not designed to single-handedly reward or discipline students, but to ensure the efficient operation of the joint cultivation mechanism through its effective implementation. The system is designed to precisely regulate and guide the academic, research and practical activities of postgraduate students, and to promote their all-round development in order to achieve the ultimate goal of education.

## 5. Conclusion

As the highest level of higher education in China, every step of adjustment of its education model is closely related to the construction of talents in the new era. The multiple explorations of the joint cultivation teaching system aim to promote a more standardized and efficient operation of joint cultivation among universities and to provide highly adaptable, complex and innovative postgraduate talents for national construction. Although there are still some shortcomings in the current system, it is still a new educational model worth promoting. We believe that by learning from the successful experience of various universities and advancing in exploration, the joint cultivation mechanism will better achieve the goal of training high-end skilled talents proposed by the Ministry of Education.

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## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- Chu, Y. Y., He, J. X., Ou, K. K., Ren, G. H., & Huang, W. H. (2022). Analysis on the Current Situation and Problems of School Enterprise Cooperation in Cultivating Professional Master's Degree Students. *Policy & Scientific Consult (Education and Scientific Research)*, No. 7, 93-96.
- Cui, C. S., Li, J. L., & Wang, M. Q. (2022). Perfection and Optimization of Dual Tutor System for Professional Degree Graduates. *Education (Higher Education Forum)*, No. 21, 38-41.
- Kuang, Q. T. (2020). *Research on Undergraduate Specialty Setting and Optimization of Independent Medical Colleges in China*. Master's Thesis, Chongqing Medical University.
- Li, H. P. (2022). Analysis on the "Collaborative Cultivation" Mode of Legal Masters Based on the Dual Tutor System. *Journal of Jiamusi Vocational Institute*, 38, 62-64.
- Qian, K., & Zhang, K. (2020). Analysis on the Current Situation of the Introduction of Overseas High-Level Scientific and Technological Talents in Provincial Universities under the Background of "Double First-Class" Construction and Countermeasures. *Today Science & Technology*, No. 5, 52-55.
- Xie, Y. M., Ning, L. C., Zhu, W. Q., Wang, M. Q., Xiao, L., & Liu, Y. T. (2020). Research on the Optimization of the Implementation of the "Dual Tutor System" for Professional Degree Postgraduates. *Journal of Higher Education*, No. 21, 50-52+55.
- Yue, C. L., Zhang, X. N., Yan, C., & Zheng, K. Y. (2021). Research on the Quality Evaluation System of Core Curriculum Construction for Medical Postgraduate Students under the New Medical Background. *Chinese Health Service Management*, 38, 863-868.