

## **Research on the Coupling Cultivation Mechanism of Graduate Students ' Innovation and Practical Ability under the Background of " Three-Comprehensive Education "**

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**Abstract:** The study delves into the coupled cultivation mechanism of graduate students' innovation and practical abilities under the background of "Three-Comprehensive Education". Firstly, this study analyzes the impact of the "Three-Comprehensive Education" concept on graduate education, emphasizing the importance of full participation, full-process cultivation, and all-round education. It further discusses the relationship between graduate students' innovation and practical abilities, pointing out the necessity of mutual promotion and common development. Based on this, it proposes specific strategies to build a coupled cultivation mechanism. These strategies include formulating scientific and reasonable cultivation plans, strengthening curriculum design and teaching reform, emphasizing practical teaching and research cultivation, and enhancing mentor guidance and academic exchange. These measures aim to promote the comprehensive development of graduate students in both academic and practical aspects through systematic cultivation. Finally, this study emphasizes the importance of continuous improvement and perfection of the cultivation mechanism to adapt to the constantly changing social needs and talent cultivation goals. The findings of this study have significant implications for enhancing the quality of graduate education and promoting higher education reform.

**Keywords:** Three-Comprehensive Education; Innovation and Practical Abilities; Coupled Cultivation; Graduate Education

### **1. Introduction**

#### **1.1 Research Background**

China's talent mechanism holds that only by

taking education, science and technology, and talent as the basic and strategic support for the comprehensive construction of a modernized country can the nation promote the cultivation of talent and the development of science and technology in the country. China's university education especially points out the need to comprehensively improve the quality of independent cultivation of talents, focus on cultivating top-notch innovative talents, and gather and utilize global talents. At the conference on China's postgraduate education held in July 2020, Chinese educators once again emphasized that postgraduate education plays an important role in cultivating innovative talents, improving innovation ability and serving economic and social development. They also stressed the need to deepen the reform of postgraduate cultivation mode, further promote the integration of science and education and industry and education, strengthen international cooperation, and strive to enhance postgraduates' practical ability and innovation ability to provide more solid talent support for the construction of the country. Therefore, it is extremely important to insist on moral education and carry out "Three-Comprehensive Education" to cultivate three-dimensional ability and quality in postgraduate education.

Postgraduate education, located at the top of national education, is a highland for the cultivation of high-level, high-quality talents, and it plays an important role in cultivating innovative talents, improving innovation capacity, serving economic and social development and promoting the modernization of the national governance system and governance capacity. Therefore, postgraduate education determines the height of national innovative talents cultivation. Meanwhile, with the development of society and the progress of science and technology, innovation and practical

ability gradually become the core academic qualities that postgraduates must have, in order to improve the quality and effect of China's postgraduate cultivation, Chinese educators must begin to pay attention to postgraduates' innovation and practical ability, and explore a kind of cultivation mode more in line with the cultivation mechanism of Chinese colleges and universities. The coupling cultivation mechanism, as a new educational concept and method, can comprehensively improve students' innovation and practical abilities and promote their all-round development. Therefore, this study aims to explore the theoretical framework and practical strategies of the coupled cultivation mechanism of graduate students' innovation and practical ability under the background of "Three-Comprehensive Education".

### **1.2 Research Aim**

This study aims to analyze the theoretical framework and practical strategy of the coupled cultivation mechanism of graduate students' innovation and practical ability in the context of "Three-Comprehensive Education", and to discuss its importance and significance, and at the same time, it will put forward the corresponding suggestions and measures, so as to provide reference and reference for the future cultivation of graduate students in colleges and universities.

### **1.3 Research Design**

This study adopts the methods of literature review, theoretical analysis and case study to analyze and research the theoretical framework and practical strategies of the coupled cultivation mechanism of graduate students' innovation and practical ability in the context of "Three-Comprehensive Education". The study will cover the related fields of postgraduate cultivation in colleges and universities, including curriculum, tutor guidance, social practice, academic exchanges and other aspects.

## **2. Literature Review**

### **2.1 Research Status on the Concept of "Three-Comprehensive Education"**

Chinese scholars have conducted extensive research on the concept of "Three-Comprehensive Education", which emphasizes on all-member, all-round and all-directional education, and focuses on the

all-round quality development of students. For example, Lin has conducted research on the theoretical and practical foundations, core essence, and key links of "Three-Comprehensive Education" in colleges and universities from both theoretical and practical perspectives, and proposed a series of practical paths for cultivating well-rounded talents to meet the demands of the country and society for talents<sup>[1]</sup>. Zhang has, starting from ideological and political education in institutions of higher education, expounded on the connotation and practical strategies of "Three-Comprehensive Education" and explored innovative paths from aspects such as curriculum systems, ideological and political activities, and guidance mechanisms, thereby providing ideas for optimizing the ideological and political education model in colleges and universities<sup>[2]</sup>. Jiang & Zhang, on the other hand, put forward specific paths for implementing education by integrating multiple forces, mobilizing resources, and combining various stages of cultivation from the perspective of graduate training in basic disciplines, offering practical references for postgraduate cultivation<sup>[3]</sup>.

### **2.2 The Research Status of Graduate Students ' Innovation and Practical Ability**

China's research on the cultivation of innovation and practical ability of graduate students, the Conference on Graduate Education held in 2020 clarified the main tasks of graduate education in China in the new era, especially in the new pattern of global competition for talents, focusing on enhancing the practical ability and innovation ability of graduate students to provide more solid talent support for the construction of country is the top priority of China's current graduate education, and the cultivation of innovative high-level talents is the Cultivating innovative high-level talents is the core of the research on the reform of postgraduate education and teaching, and exploring a new mode of postgraduate cultivation is the most urgent task of postgraduate education in Chinese universities and colleges<sup>[4]</sup>.

#### **2.2.1 Research on the cultivation of graduate students ' innovative ability**

Peng & Su discussed the necessity of strengthening the cultivation of graduate students ' innovation ability in colleges and universities according to the basic situation of

graduate education, the outstanding problems and the current background of the times. By summarizing the methods of improving the innovation ability of graduate students in the world, combined with their own exploration and practice, they put forward specific measures to improve the quality of graduate education from the perspective of strengthening the cultivation of innovation ability<sup>[5]</sup>. Guo et al. analyzed the current situation of China's postgraduate international education, explored the international cultivation mode of materials postgraduates from the three levels of establishing a cultivation system focusing on the cultivation of innovation ability, building a scientific research platform to promote the rapid development of the discipline, and carrying out international exchanges in line with the international frontier fields, as well as the three phases of tutors and young teachers, postgraduates, and undergraduates, providing a reference to the cultivation of innovation ability of postgraduates. Provide reference for the cultivation of innovation ability of graduate students<sup>[4]</sup>. Xu & Wang explored the collaborative cultivation mode of graduate students' innovation ability under the background of new engineering, including breaking through the single cultivation of teacher-student inheritance, cross-school cooperative cultivation mechanism, breaking through the closed cultivation of colleges and universities, realizing the cooperative cultivation of industries, and constructing the cooperative cultivation mechanism of graduate students combining production, learning and research, so as to improve the innovation ability of graduate students<sup>[6]</sup>.

### 2.2.2 Research on the cultivation of graduate students' practical ability

Guo et al. from Northwest A & F University, aiming at the problems of weak practical ability and innovation ability in the cultivation process of graduate students with mechanical professional degree, and the difficulty in meeting the actual needs of enterprises for talents, constructed the cultivation mode of graduate students' practical ability based on school-enterprise collaborative innovation, including three cultivation modes of school-enterprise resource sharing, school-enterprise project cooperation team formation and participation in enterprise innovation competition. Through the practice of

school-enterprise cooperation in the past three years, the effectiveness of the talent cultivation mode was verified<sup>[7]</sup>. Shao & Qiao believe that the lack of practical ability cultivation of postgraduates with master's degree in education directly affects the quality of talent cultivation. Based on the analysis of the connotation of professional practical ability of such postgraduates, this paper puts forward the concept of whole-process cultivation of practical ability and activates the enthusiasm of collaborative cultivation of base schools through the construction of innovative joint cultivation practice base, and then puts forward some measures to cultivate practical ability, and introduces the practical results achieve<sup>[8]</sup>. Taking the full-time engineering master of Shanghai Second Polytechnic University as a case study, Zheng et al. combed the internal logic of engineering knowledge and practical ability from the perspective of engineering philosophy and pedagogy, and constructed a three-stage step-by-step practical cultivation model of cognition-application-innovation, and gradually explored the multi-governance engineering practice mechanism of 'government-school-enterprise-society'. The cultivation of graduate students' practical ability has achieved remarkable results<sup>[9]</sup>.

## 2.3 Research Status of Coupling Culture Mechanism

At present, the educational and academic circles have conducted extensive research on the coupling cultivation mechanism, which is considered to be an effective cultivation method. They have put forward a variety of coupling cultivation strategies and methods to promote the overall development of students. For example, Ju focuses on the cultivation of innovative technical and skilled talents in advanced manufacturing industry, aiming at the lack of top-level design of innovation and entrepreneurship education in higher vocational colleges, and the lack of close integration with industrial development and professional education. Focusing on the cultivation of innovative technical and skilled talents in advanced manufacturing industry, this paper puts forward the concept of "small problem-big ambition" innovation and entrepreneurship education, and explores the "Liu's plan" for the cultivation of innovative ability of higher vocational students based on the first-line

problem base of enterprises. It focuses on the coupling of industry and entrepreneurship, so as to cultivate the innovative ability of higher vocational students.<sup>[10]</sup> Li et al., having studied the coupling of industry-education-research collaborative innovation in the AI-driven packaging and printing industry, achieved precise resource matching and value co-creation among the education end, industry end, and innovation end through the construction of a "dynamic coupling mechanism" and a "three-stage progressive collaborative path"<sup>[11]</sup>.

### **3. The Theoretical Framework of the Coupling Cultivation Mechanism of Graduate Students' Innovation and Practical Ability under the Background of "Three-Comprehensive Education"**

#### **3.1 The Connotation of the Concept of "Three-Comprehensive Education" and Its Influence on Postgraduate Cultivation**

The concept of "Three-Comprehensive Education" emphasizes all-staff, whole-process and all-round education, and pays attention to the overall quality development of students. In the cultivation of graduate students, the concept of "Three-Comprehensive Education" can promote the interaction and communication among schools, tutors, students and other parties, and form a joint force of education. At the same time, the concept of "Three-Comprehensive Education" can guide the goal and direction of postgraduate cultivation, and provide important theoretical support for improving the quality of postgraduate cultivation.

#### **3.2 The Definition and Relationship Analysis of Graduate Students' Innovation and Practical Ability**

Innovation and practice ability is the key ability of graduate students' future career development. Innovation includes thinking innovation, method innovation, etc. Practical ability refers to the ability to apply theoretical knowledge to practice. In the coupling cultivation mechanism, innovation and practical ability are two complementary aspects. By strengthening innovative thinking cultivation and practical teaching, students' innovative ability and practical ability can be improved, and the two can be improved together.

#### **3.3 The Construction Principle and**

#### **Implementation Strategy of the Coupling Cultivation Mechanism**

The coupling cultivation mechanism is to improve students' innovation and practical ability through various means and aspects. When constructing the coupling cultivation mechanism, universities need to follow the following principles: student-centered, practice-oriented, and innovation-driven. The specific implementation strategies are as follows:

##### **3.3.1 Develop a scientific and reasonable cultivation plan**

The cultivation plan is the basis and guidance of postgraduate cultivation. It is necessary to formulate a comprehensive and systematic cultivation plan based on the concept of "Three-Comprehensive Education" and the needs of postgraduate innovation and practical ability. This plan should include academic courses, practical courses, scientific research cultivation, innovative thinking cultivation and other aspects to promote the comprehensive development of graduate students in academic and practical aspects.

##### **3.3.2 Strengthen the curriculum and teaching reform**

The course is an important part of postgraduate cultivation. It is necessary to strengthen the curriculum setting and teaching reform in combination with the concept of "Three-Comprehensive Education" and the needs of postgraduate innovation and practical ability. This includes optimizing the curriculum structure, increasing interdisciplinary courses, and adopting teaching methods such as case teaching and project teaching to cultivate students' innovative thinking and practical ability.

##### **3.3.3 Focus on practical teaching and scientific research cultivation**

Practical teaching and scientific research cultivation are an important part of postgraduate cultivation, and also an important means to promote the development of postgraduate innovation and practical ability. Schools should strengthen the construction of laboratories, provide practical platforms, encourage students to participate in scientific research projects, and exercise innovation ability through practice. At the same time, it is also necessary to establish a perfect practice and scientific research cultivation mechanism, including the management of practical teaching, the selection and implementation of scientific research



projects, the evaluation and reward of scientific research results, etc.

#### 3.3.4 Strengthen mentoring and academic exchanges

Tutors are important instructors for postgraduate cultivation, and their guidance and support have an important impact on the growth and development of postgraduates. The school should strengthen the construction of the tutor team and improve the guidance ability and level of the tutor. At the same time, it is also necessary to establish a sound academic exchange mechanism, including regular academic lectures, seminars, exchange meetings, etc., to promote cooperation and exchanges between graduate students.

#### 3.3.5 Multiple collaboration and interaction of organization

Postgraduate cultivation is a comprehensive process, which requires the joint efforts of schools, tutors, students and other parties. Schools should provide a good learning environment and resources, teachers should provide effective guidance and support, and students should actively participate in practical activities. At the same time, it is also necessary to establish a sound collaboration and interaction mechanism, including the establishment of multidisciplinary teams, the development of interdisciplinary cooperation projects, and the encouragement of students to participate in social practice.

#### 3.3.6 Establish a scientific evaluation system

Evaluation is an important part of postgraduate cultivation and an important means to promote the development of postgraduate innovation and practical ability. Schools should establish a scientific evaluation system, taking into account academic performance, practical results and innovative thinking. At the same time, it is also necessary to establish a reward and punishment mechanism to encourage students to develop in an all-round way.

#### 3.3.7 Continuous improvement and perfection

Postgraduate cultivation is a continuous process, which needs to constantly improve and perfect the cultivation mechanism. According to the implementation effect and feedback, the school should constantly adjust and optimize the cultivation plan, curriculum setting, practical teaching and scientific research cultivation, tutor guidance and academic exchange and other measures. At the same time, it is also necessary to strengthen the connection and cooperation

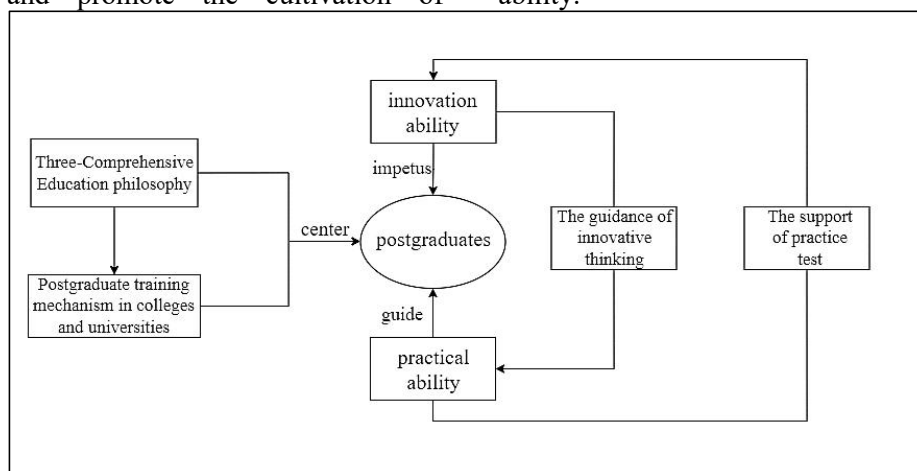
with the society to adapt to the changing social needs and talent cultivation objectives.

### 3.4 The Construction of the Theoretical Framework

Through the above analysis, this study can construct a theoretical framework for the coupling cultivation mechanism of graduate students' innovation and practical ability under the background of "Three-Comprehensive Education". The specific logical structure of this framework is visually presented in Figure 1, which clearly shows the core elements of the mechanism and their interconnections. Under the guidance of the concept of "Three-Comprehensive Education", the influence of graduate education is reflected in the transformation of cultivation objectives and the innovation of cultivation methods. Traditionally, postgraduate cultivation mainly focuses on the cultivation of academic ability, and the concept of "Three-Comprehensive Education" puts forward higher requirements, requiring the organic combination of professional knowledge education, scientific research ability cultivation and social responsibility cultivation to cultivate high-level talents with innovative spirit and practical ability. The relationship between graduate students' innovation and practical ability is reflected in the fact that innovation needs the verification and support of practice, while practice needs the guidance of innovative thinking and methods. Graduate students should apply the theoretical knowledge to practical problems through scientific research practice and innovation activities, and constantly carry out practical exploration and innovation attempts, so as to improve their scientific research innovation ability and problem-solving ability. The construction of the final coupling cultivation mechanism requires the construction of a diversified cultivation system in academic research, practical ability and innovation ability. This includes strengthening interdisciplinary cooperation, encouraging graduate students to participate in scientific research teams, carrying out innovative projects and practical activities; strengthen the reform of the tutor system, the tutor should become a good teacher and friend in academic and practical, and guide students to carry out innovative research and practical exploration; at the same time, the school also needs to establish a sound evaluation and incentive mechanism, encourage graduate

students to participate in innovative practice activities, and promote the cultivation of

graduate students' innovation and practical ability.



**Figure 1. The Theoretical Diagram of the Coupling Cultivation Mechanism of Innovation and Practical Ability of College Graduate Students under the Guidance of "Three-Comprehensive Education"**

#### 4. Analysis and Elaboration of Coupling Mechanism

##### 4.1 The Connotation and Characteristics of Coupling Mechanism

The coupling mechanism refers to the interaction and mutual influence between two or more factors to achieve the effect of common development. In postgraduate cultivation, the coupling mechanism refers to the common improvement of students' innovation and practical ability through various means and aspects of cultivation. This mechanism is interactive, complementary, systematic and dynamic.

##### 4.2 The Role and Significance of Coupling Mechanism in Postgraduate Cultivation

Through the implementation of the coupling mechanism, students' innovation and practical ability can be comprehensively improved, and the quality and effect of postgraduate cultivation can be improved. At the same time, the coupling mechanism can promote the interaction and communication among schools, tutors, students and other parties to form a joint force of education. In addition, the coupling mechanism can also promote the reform and innovation of higher education and improve the quality and level of higher education.

##### 4.3 The Operation Mode and Implementation Strategy of Coupling Mechanism

In the operation of the coupling mechanism, it is

necessary to pay attention to the following aspects: formulating a scientific and reasonable cultivation plan, strengthening curriculum setting and teaching reform, paying attention to practical teaching and scientific research cultivation, and strengthening tutor guidance and academic exchanges. At the same time, it is necessary to establish an effective evaluation mechanism to supervise and evaluate the cultivation process and results, and to find problems in time and adjust and optimize them.

#### 5. Theoretical Analysis Results and Discussion

##### 5.1 The Analysis Results of the Influence of the Concept of "Three-Comprehensive Education" on the Cultivation of Graduate Students

Through theoretical analysis, this study finds that the concept of "Three-Comprehensive Education" has an important influence on postgraduate cultivation by discussing the connotation and characteristics of full participation, whole process cultivation and all-round education. Full participation means that schools, tutors, students and other parties participate in the postgraduate cultivation process to form a joint force of education; the whole process of cultivation emphasizes from enrollment to graduation, throughout the whole process of postgraduate cultivation; all-round education requires comprehensive cultivation of graduate students from academic, practical, personality and other aspects. This concept can

promote the interaction and communication among schools, tutors, students and other parties, form a joint force of education, and provide important theoretical support for improving the quality of postgraduate cultivation.

### **5.2 The Analysis Results of the Relationship between Graduate Students ' Innovation and Practical Ability**

Through theoretical analysis, this study find that innovation and practical ability are the core objectives of postgraduate cultivation, and the two promote each other and develop together. Innovative thinking and practical ability are complementary to each other. Innovative thinking helps to find new problems and put forward new ideas, while practical ability helps to transform innovative thinking into practical results. Therefore, in the process of postgraduate cultivation, universities need to pay attention to the common development of innovation and practical ability. As two complementary aspects, by strengthening innovative thinking cultivation and practical teaching, universities can improve students ' innovative ability and practical ability, and achieve the common improvement of the two.

### **5.3 The Analysis Results of the Construction and Implementation Strategy of the Coupling Cultivation Mechanism**

Through theoretical analysis, this study find that the coupling cultivation mechanism is an effective way of postgraduate cultivation. By formulating scientifically sound cultivation plans, enhancing curriculum design and instructional reforms, paying attention to practical teaching and scientific research cultivation, strengthening tutor guidance and academic exchanges, universities can promote the comprehensive development of graduate students in academic and practical aspects. The implementation of these measures requires close cooperation and joint efforts of all parties to form a complete education system.

### **5.4 Results and Discussion**

Based on the theoretical analysis, this study engages in an in-depth discussion and reflection, leading to the following conclusions: under the background of "Three-Comprehensive Education" the coupling cultivation mechanism of graduate students ' innovation and practical ability has important theoretical and practical

significance. It not only enhances the quality and effectiveness of postgraduate education but also promotes students' holistic development by integrating academic rigor with practical competence. However, the current research on this mechanism is not yet perfect, so the implementation of this kind of postgraduate coupling cultivation mechanism needs further research and practical exploration to continuously improve and optimize. In this way, relevant institutions can make further development and contribution to postgraduate cultivation.

## **6. Conclusion and Suggestion**

### **6.1 Research Conclusion Summary**

Based on an in-depth analysis and research of the theoretical framework and practical strategies of the coupling cultivation mechanism for postgraduate innovation and practical ability under the background of "Three-Comprehensive Education" this study draws the following conclusions: The concept of "Three-Comprehensive Education" is of great significance to improve the quality of postgraduate cultivation, which requires the participation and efforts of all parties. Under the concept of "Three-Comprehensive Education" the coupling cultivation mechanism is an effective way of postgraduate cultivation. At the same time, postgraduate innovation and practical ability are complementary to each other, and it is also necessary to pay attention to the coupling development of the two. It is clear that the implementation of measures such as formulating scientific and reasonable cultivation plans, strengthening curriculum setting and teaching reform, paying attention to practical teaching and scientific research cultivation, strengthening tutor guidance and academic exchanges can comprehensively improve the innovation and practical ability of postgraduates, and improve the quality and effect of postgraduate cultivation. At the same time, this mechanism can also promote the interaction and communication among schools, tutors, students and other parties, and form a joint force of education, such a collaborative environment enables a more comprehensive and holistic cultivation of postgraduate students, equipping them with the necessary skills and knowledge for future academic and professional endeavors.

## **6.2 Prospects and Suggestions for Future Research**

Future research can be carried out from the following aspects :

6.2.1 Further explore the specific application methods and strategies of the concept of "Three-Comprehensive Education" in postgraduate cultivation and improve the understanding and participation of all parties. By organizing seminars, lectures, and other academic activities, more people understand and agree with the importance of the concept of "Three-Comprehensive Education" to form a postgraduate cultivation atmosphere with the participation of all staff in colleges and universities.

6.2.2 A more in-depth exploration of the relationship between postgraduate students' innovation and practical abilities and their influencing factors is essential. Strengthen practical teaching and scientific research cultivation to improve students' practical ability and innovative thinking. Schools should increase investment in laboratory construction and practical teaching. By offering an abundance of practical projects and scientific research cultivation opportunities, students can cultivate their innovative abilities through hands-on experiences and enhance their problem-solving skills. At the same time, schools should formulate a scientific and reasonable cultivation plan and pay attention to the coupling development of innovation and practical ability. In the process of formulating postgraduate cultivation programs, it is imperative to comprehensively account for students' individual variances and innovative needs. By offering a diverse array of curriculum choices and practical experiences, can facilitate the holistic development of postgraduate students, enabling them to adeptly navigate multifaceted challenges in both academic and practical arenas.

6.2.3 Strengthen tutor guidance and academic exchanges and improve students' academic literacy and cooperation ability. Tutors should give full play to their guiding role, pay attention to students' academic growth and development needs, and provide personalized guidance and support. Schools should arrange academic exchange activities on a regular basis. By encouraging students to actively engage in academic debates and participate in research collaborations, these activities aim to effectively improve students' academic literacy and their

ability to work in teams. Through such endeavors, students can not only deepen their understanding of academic knowledge but also develop essential interpersonal skills that are crucial for their future academic and professional success.

6.2.4 It can study the practical experience and effect of different disciplines or different types of universities in the coupling cultivation mechanism, and continuously improve and perfect the cultivation mechanism to adapt to the changing social needs and talent cultivation objectives. Universities should conduct regular evaluations of the cultivation plan's implementation effectiveness. Based on the feedback received, they must promptly adjust and optimize the cultivation plans and related measures. This proactive approach is crucial for ensuring the high-quality and effectiveness of postgraduate education. Additionally, institutions should strengthen their engagement and cooperation with society. Through this interaction, they can closely monitor changes in the social demand for talents and make timely adjustments to the cultivation objectives and strategies.

In a word, the coupling cultivation mechanism of postgraduate innovation and practical ability under the background of "Three-Comprehensive Education" is a systematic project, which requires the joint efforts and close cooperation of all parties, and needs to pay attention to the long-term effect of the coupling cultivation mechanism and its impact on the future career development of postgraduates. By promoting the concept of "Three-Comprehensive Education" formulating scientific and reasonable cultivation plans, strengthening practical teaching and scientific research cultivation, strengthening tutor guidance and academic exchanges, universities can effectively foster the holistic development of postgraduates in both academic and practical dimensions. This, in turn, will significantly enhance the quality of postgraduate education and bolster their social adaptability, thereby equipping them with the requisite capabilities to thrive in the professional realm.

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