

# Research on the Training of Graduate Students' Practice and Innovation Ability in Management Science and Engineering

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**Abstract.** Graduate students are the main body of the nation's future innovative talents. It is of great strategic significance for the construction of innovative country to strengthen the training of graduate students' innovative ability. Based on the existing research results, this paper defines the concept of graduate student's practical ability and innovation ability. Through the questionnaire survey, the present training of management science and engineering practice and innovation ability of graduate students majoring in the whole investigation, analyzes the main problems existing in the cultivation, and analyzes the management science and engineering graduate students practice and innovation ability of influence factor, finally puts forward relevant countermeasures of management science and engineering practice and innovation ability of graduate students majoring in.

## Introduction

It is of great significance for our country to constantly improve the postgraduate training mode and improve its practice and innovation ability. At present, the research of the training of practice and innovation ability at home and abroad have many achievements, but the research on the training of graduate students' practice and innovation ability for management science and engineering major is still a blank and lack of pertinence.

## Definition and Theoretical Analysis of the Concept of Practice Ability and Innovation Ability Graduate Students

**Definition of practical ability.** Through consulting a large number of literature, many scholars at home and abroad have defined the practical ability, and most of them are from the perspective of practical intelligence[1]. Through combing the literature, this paper holds that practical ability is composed of a series of complex psychological and physiological factors, which formed and manifested in practical activities, and people consciously and deliberately transform the material activities of the objective world[2]. Based on all kinds of ability factors in the field of practical activities, postgraduates' practical ability consists of four elements, namely, practical motivation, general practical ability factors, special practical ability factors and situational practice ability factors.

**Definition of Innovation Ability.** This paper thinks that "innovation" is the ability of to use new ideas, concepts to create new things ,new products, processes or organization[3].This paper argues that graduate students' innovative ability refers to a series of capacity system formed by graduate students based on solid theoretical knowledge, including innovative thinking, innovative thinking, innovative spirit, innovative behavior and innovative consciousness. It is manifested as: being good at finding problems, asking questions and solving problems, being good at accepting new things and new ideas, not being influenced by mindset, being able to put forward new ways to solve problems and changing the way of others to see problems in a way.

## **The Current Situation of the Training of Graduate Students' Practice Ability and Innovation Ability in Management Science and Engineering**

**Content of Questionnaire Survey.** This questionnaire mainly investigates the basic situation of the training of graduate students' practice and innovation ability in management science and engineering. Specific to Wuhan University, Huazhong University of Science and Technology, Wuhan University of Technology, Huazhong Agricultural University, China University of Geosciences, central China Normal University. Through the issuance, recovery and analysis of questionnaire data, from the overall situation, the degree of attention, training three aspects of system, grasp the true status of practice and innovation ability graduate students.

**Sample Overall Situation.** In this survey, 360 questionnaires were distributed to postgraduates through the online questionnaire platform, 100 questionnaires were sent to graduate tutors, the basic situation of the questionnaire distribution and recovery is shown in table 1.

Table 1 Distribution and recovery of questionnaires

University	Effective number of student samples	Effective number of teachers samples
Wuhan University	63	21
Huazhong University of Science and Technology	61	28
Wuhan University of Technology	180	32
Others	51	15
Total	355	96

In recent years, due to the increasing demand for graduate students in management engineering, some areas and universities have refined the direction of discipline setting, and have carried out a new round of enrollment expansion. But in the absence of blind expansion of full investigation and lack of innovation in the background, resulting in management of engineering graduate scale deformity expanding, deepening alienation, the relationship between teachers and students lack of creative ability of students and teaching obsolete curriculum setting and employment difficulties and many other problems gradually revealed. Coupled with the increasing demand for high-level talents, the emphasis on graduate training has deepened, and related policies have been promulgated to promote the development of graduate training[4]. Therefore, colleges and universities actively explore the teaching concept, training mode and development direction of management engineering postgraduates under the new situation, which has become an urgent problem to solve.

In the past, Chinese universities used classic textbooks to teach graduate economics, teaching classic economic theories and research methods, which made an important contribution to training postgraduates' academic literacy and engaging in scientific research ability[5]. But because the market labor division and market expansion and promote the discipline of refinement, in order to solve the previous graduate training in "scientific research and practice" mode of many colleges and universities set up professional degree of graduate courses, in order to "local" to carry out postgraduate education and training. However, due to the lack of top-level system design and good practical experience, lots of schools and students can't understand the difference between professional degree and academic degree, so it's hard to train student's practice ability and innovate ability.

Table 2 Students and teachers' attitude to the training of students' practice ability and innovate ability at the graduate level

attitude	teachers	Proportion	students	Proportion
Very necessary	62	64.6%	298	83.9%
necessary	34	35.4%	52	14.6%
it does not matter	0	0	5	1.4%
unnecessary	0	0	0	0

According to the survey, college tutors and students themselves pay much attention to the training of Postgraduates' practice and innovation ability, but there are obvious differences in the degree of importance. 83.9% thought that it is necessary to cultivate students' practice and innovation ability in graduate stage.

**Situation of Students Training.** Because of the training goals in the field of professional fields, the specific and professional characteristics of each school are not the same. But there are something are common: (1) the cultivation of compound knowledge structure; (2) the ability of decision-making support tube culture; (3) training practice ability and innovation ability; (4) emphasis on training to meet the enterprise [6]. The curriculum system includes 4 parts: degree public course, degree basic course, professional compulsory course, professional elective course and optional course. The postgraduate training carries out the credit system, which includes 3 parts: curriculum credits, scientific research credits and practical credits. Different colleges and universities offer different courses, but most of these courses include English, economics, computer programming, information technology, management methods, mathematical theories and methods, as well as applied research courses.

Table 3 Training methods for master degree points in science and engineering

Postgraduate types	Academic degree	professional degree
Training Method	1 Set up according to the discipline	1 Guided by professional practice
	2 On the guidance of academic research	2 Attaching importance to practice and Application
	3 Focus on the theory and method	3 Training high-level talents with regular and high level training in professional and specialized technology
	4 Training the researchers of university teachers and scientific research institutions	

**Main Problems.** Lacks a suitable platform for learning and practice. According to the questionnaires, 72.7% graduate students and 53.1% instructors in universities have not yet set up relevant and practical ability and innovation ability of curriculum; Most students rarely attend academic meetings. It shown that the schools pay attention to the practice of graduate students and the cultivation of innovative ability, but the specific implementation plan did not completely fall.

Lack of school and teacher guidance. In the training program, there is a disjunction between theoretical study, scientific research and social practice. Now, the first year for graduate is learning theory. For the last year, students face the dual pressures of scientific research and social practice, most students can't concentrate on the scientific research work, to graduate students in recent years, the graduation thesis quality is not high, the training plan, practice and innovation ability of students has not been a qualitative improvement.

Lack of effective incentive mechanism. 71.68% of the students said that they involved in the tutor's research projects each year. Due to the lack of competition and incentive mechanism,

common for graduate students to participate in research projects on the enthusiasm is not high, which is difficult to improve the ability of innovation and practice. In addition, the students help teachers to do the task, to ensure students' graduation thesis mentor passed, has become a kind of tacit understanding, rather than focus on the training of students, forming a "subject, subsidy" is a simple pattern of employment, the destruction of the original "mutual relationship between teachers and students.

### **Management Science and Engineering Graduate Students' Practice and Innovation Ability Training Countermeasures**

**Reform the Postgraduate Enrollment System.** Japan introduced the graduate education system and American studies, Graduate School of business in Germany, founded the Graduate School of American style, but also develop their own "official study" the integration of training model and industrial laboratory research and education mode of graduate students. On the selection of the system, we can consider the reform of the existing recruitment system, reform the selection standard, pay more attention to the students' comprehensive quality and ability of scientific research assessment, focusing on testing the quality and ability of the students, pay more attention to the foreign literature and foreign language exam test students' reading comprehension ability.

**Focus on the Diversification of Training Goals.** In the training mode, our postgraduate training should adhere to the combination of theory and practice, give full play to the two different educational environments and educational resources of the school and society, and improve their actual combat ability and comprehensive quality. We should set up an innovative practice base, change the past single academic education, turn to the training mode of research and practical combination, and give full play to all kinds of social resources to adapt to the professional education mode of scientific degree. The goal of diversification is to train high-level researchers engaged in rigorous academic research, followed by training qualified and efficient practical personnel.

**Establish and Improve the Market Mechanism of Quality Evaluation and Quality Supervision of Postgraduate Education.** Chinese colleges are tough to get in but easy to get out. This graduate management system greatly influences the quality of postgraduate education in our country, must make graduate education oriented to the market, the use of incentive mechanism and competition mechanism. We should formulate detailed regulations on the study of the study, paper writing, and the evaluation of quality, and implement a strict elimination system. In addition, graduate quality supervision is not only for students themselves, but also for tutors' research results when selecting advisors. It is also necessary to examine the academic ability of tutors, and postpone enrollment for tutors. Strict paper management to improve the quality of the paper. Schools should create better conditions for graduate students to participate in scientific research, so that the graduate students have more opportunities to help their tutors or to engage in scientific research independently.

### **Conclusion**

This paper used the questionnaire survey method, the problem of the graduate students' practical ability and innovation ability of management science and engineering major is deeply dissect, and the countermeasures are put forward from four angles, including the enrollment system, the training target, the teaching reform and the evaluation supervision mechanism, which will be more excavated in the future. In the direction of management science and engineering graduate students' practice and

innovation ability training mechanism to study, at the same time will not be limited to the major, but in combination with the actual situation of the graduate students' practice and innovation ability training mechanism to exploring.

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