

# The Role of Practical Teaching in Agricultural Universities in the Training of Graduates Major in Mechanical Design

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**Abstract.** Graduate education in Colleges and universities is one of its important training indicators. In this paper, the training methods, training level and training means of graduate students in agricultural colleges and universities are discussed. The evaluation indexes are used to evaluate the quality of postgraduate training, and the indexes in the process of postgraduate training are compared, and the optimal scheme is obtained. At the same time, it is suggested that colleges and universities should improve the training of Postgraduates' practical links and analyze the characteristics of mechanical design specialty in agricultural universities. The research provides theoretical basis for the cultivation of master of mechanical engineering in agricultural universities.

## Introduction

Practical teaching occupies an important position in the teaching task of Engineering Education in colleges and universities. The original intention of practice teaching is to cultivate the students' creative consciousness and practical ability, and to do a good job for them to step on their work more smoothly. All colleges and universities have taken corresponding measures to better match [1] with professional accreditation of engineering education. Practice teaching is an important way for colleges and universities to improve students' practical ability and to understand engineering ability. Therefore, the relevant research could bring a good application value, and better factor for postgraduate research in universities.

It is significant to conduct engineering education in colleges and universities, core of which is to confirm the established quality standard requirements for engineering professional graduates to meet the approval of the industry. It is a qualified evaluation [2] based on the training goal and the requirement of graduation export. Engineering education in the process of national industrialization provided an irreplaceable precondition for the formation and development of a wide, independent and complete industrial system in 2017. Mechanical design manufacturing and automation is a subject of engineering. It is a senior engineering technician who specializes in the basic knowledge and application of mechanical design in China's manufacturing industry from the manufacturing country to the manufacturing power. China firmly grasps the important historical opportunity of the new round of technological revolution and industrial transformation. It has inherited and developed rapidly, and promulgated "made in China 2025". It is a new requirement of China's manufacturing industry in 2025 to innovate, achieve green development, optimize China's industrial structure and cultivate talents. Mechanical design, manufacturing and automation, as a major to train high quality graduate students majoring in engineering, fully understood that armchair talk is far from enough. In the background of current engineering education accreditation, the feasibility and effectiveness of the practical teaching mode of mechanical specialty should fully conform to the standards of engineering education accreditation.

## Introduction of Measures

The practice teaching mode of traditional machinery specialty emphasize on theoretical teaching and treat practice teaching as a subsidiary. It paid attention to the cultivation of students' theoretical knowledge, which will lead to the disconnection between theoretical study and practice. Practice teaching is irreplaceable in other teaching forms. The discipline of mechanical engineering is a very

practical application subject. It is necessary to combine theory with practice in order to have a perceptual knowledge. The practice teaching mode of traditional mechanical graduate students includes five aspects: metalworking practice, professional experiment course, and professional course design, visit practice, graduation thesis and so on. But these are still not enough. For the training of students' engineering ability, more forms should be adopted. The school will also pay attention to the students' skill training for modern manufacturing technology, make full use of school laboratory equipment and set up experimental courses, such as mechanical principle experiment course, mechanical design experiment course, test technical experiment course and theory. Mechanics experiment class is an important style.

**To establish quality evaluation system, improve the construction of postgraduate tutor team, and strengthen the comprehensive training of postgraduates.**

As the leader of graduate students at the stage of master's study, the academic attainments, research directions and thinking methods have a profound influence on the future scientific research and development of graduate students. Therefore, the graduate supervisor not only require a high academic attainments, but also a good professional ethics, and a quality evaluation system. They should be established, and the system should be evaluated from the aspects of teacher ethics, academic level and comprehensive quality.

**On the basis of the joint project of government, production, learning and research, to integrate various advantages and resources.**

Mechanical engineering lies in the close combination of practice and theory. The combination of government, school and research institute provides all kinds of advantages for the training of mechanical graduate students.

**Government plays a guiding role to create a good social environment for graduate students to provide guidance for universities and enterprises**

To meet the perspective of social development and market demand, government should provide policy support for the combination of production, learning and research through policy formulation.

The government takes the lead in forming social concerns and support through media publicity, policy incentives and organizational forums, promoting the cooperation of all parties, promoting innovation and development, and striving to create a good environment for government guidance, positive colleges and universities and enterprise participation.

**Colleges establish scientific research platform, promote graduate students to learn and practice in scientific research projects**

It is important by integrating existing scientific research resources, building the laboratory and engineering center into an effective platform for combining production, research and research, and cooperating with enterprises to build scientific research centers. By taking part in the theoretical and practical theories and methods involved in the subject of the tutor and the horizontal subject of the enterprise, the graduate students will combine the learned knowledge with them. The scientific research platform of the university and the enterprise should be applied to overcome the difficulties in the subject under the help of the tutor.

## **Improving the relationship between universities and enterprises**

### **Selection of school enterprise cooperation mode**

The mode of school enterprise cooperation should be taken and set up a postgraduate internship base as appropriate, which can deal with it accordingly, and cooperate in related fields. The state has clearly pointed out that enterprises are the mainstay of high and new technology innovation, and higher education institutions must provide technical support and intellectual assistance for enterprises' innovation. At the same time, we should also take into account the difference between enterprises and universities when it is deal in university.

To enhance participation, cultivate and store talents of the college students, the competitiveness of modern enterprises is mainly reflected in the mastery of core technology. Therefore, in the process of improving the technology content of the products, enterprises will choose to cooperate with universities and make use of the scientific research resources and talents of colleges.

Universities are unable to break through the bottlenecks. At the same time, enterprises can send enterprise to university for training. Through cooperation with universities, enterprises have trained and stored a large number of talents for R & D.

There are various modes of the existing school enterprise cooperation, which are funded by the university and the enterprise as the mode of order cooperation to train the graduate students' practical teaching. It has adopted the graduate students to improve their own quality, and adopt a high starting point model for training, and the model of the participation of the enterprises as the main body of cooperation and the participation of the enterprises. However, considering the problems in the process of funding and the specific implementation process, many colleges, universities and enterprises joint training of graduate students in the model is only oral, in the actual operation, there are a lot of practical problems to deal with. Therefore, there are still many problems to be solved in training graduate students in school enterprise cooperation. In this respect, Shenyang Agricultural University has carried out a useful attempt, Shenyang Agricultural University established the Haicheng training base in Haicheng city, Anshan, Liaoning Province, It cover an area of more than 2000 mu. Relying on the support of the Haicheng government, the establishment of a relatively complete supporting measures. On this basis, combined with the actual situation of the school, it has made contributions to the local economy of Haicheng city. At the same time, the training of graduate students in the field of machinery has gone out of a distinctive way. That is to set up an agricultural machinery supporting exhibition hall in the training center. It can receive graduate students to transform their scientific research results into physical objects and test them immediately. In view of many problems in the design and theory of agricultural machinery, the traditional test conditions are difficult to meet the demand. But it combined with the existing conditions, it can inject new vitality into its development and provide new ideas for the training of the existing graduate students.

### **The practice and effectiveness of the traditional training model of mechanical graduate students in agricultural colleges and universities.**

Our school has high requirements for the quality of graduate students' training. Academic postgraduates must publish a paper in the CSCD journals, and the professional degree master is not less than half a year's internship in the enterprise. At the same time, graduate students should take part in the application, development and transformation of scientific research projects. This can help them grasp and use theoretical knowledge in scientific research, and get in touch with the cutting-edge theories and methods in their fields. When they take part in the study project, graduate students have exercised the ability of teamwork to train their interpersonal communicating and communicating.

### **The improvement of graduate students' practical ability**

In order to improve the graduate students' practical ability we need to combine training with their interests, social needs, the actual situation of schools and research groups. The research topic of graduate students is the first step for graduate students to carry out scientific research work. Whether the scientific research goal is appropriate or not is related to the significance of the research, whether it can be smooth, or even if it can be completed on time. Some scientific research teams, doctoral students, master degree students are more, bear the national level, provincial level, or bear large funds for more horizontal scientific research projects, many scientific research tasks, high pressure, this time students can participate in it, the general situation will benefit a lot. If the students are located in the subject group, the number is less and the scientific research funds are not much, then it is more necessary to start from the personal interest, because some students have many own ideas and views on this subject, and the tutor will generally respect their own wishes.

Combined with social demand, that is to say, many mechanical graduate students dare not engage in practical problems, only the computer simulation. In fact, if the student ability is stronger, it can select multiple subject within the prescribed time to complete. It should have the courage to challenge themselves, establish subject, and consider the actual factors, to make design class topics. Since it is a scientific research activity, it is a kind of creative labor, and there is a certain risk. If the

students are able to undertake the risk of such extended graduation, they will put great pressure on themselves. In fact, students have different personal abilities, interests, consciousness and willingness to work in teams. Therefore it is necessary to consider their own situation and choose the topic appropriately.

### **Take participate in academic activities actively**

Academic activities play a unique role in mastering the frontiers of disciplines, improving their research accomplishments, expanding their scientific research horizons and inspiring research ideas. Its types include: academic annual meeting, international academic conference, academic report, Academic Salon, academic symposium, brainstorming academic conference, Group Symposium and symposium, academic debate and so on. Universities and research institutes usually conduct various academic activities on a regular or irregular basis. They are generally advertised on the website in advance, and postgraduates should actively attend to and participate in them. It needs to be emphasized not only to participate in this subject, to attend lectures and other academic activities in the direction of this study, but to actively participate in the academic activities of other research directions and other disciplines, because from the experience of inventions in human history, the cross collisions of various knowledge in different disciplines and research directions are often seen. It will enlighten and guide the research activities that we have to carry out.

### **Set up fuzzy function for hierarchical processing**

The following conclusions can be drawn from the corresponding research on current research. The corresponding findings can be concluded as follows:

The process of analyzing the hierarchy combines qualitative and quantitative analysis, and analyzes the factors that need to be considered, providing an effective method for solving complex problems. In order to make the evaluation dimension of the public English reversal classroom teaching more in line with the objective reality, this paper uses the analytic hierarchy process software AHP to determine the weight of the evaluation dimension, so as to improve the accuracy of the weight of each index. The advantage of this method is that it is easy to use and easy to use. It automatically determines the input judgment matrix and checks the consistency. The results can be derived from a variety of formats, such as PDF, Excel and so on.

Table 2 significance level of ahp

Scale	explain
1	Two elements are equally important to an attribute
3	When two elements are compared to one attribute, one element is slightly more important than the other
5	When two elements are compared to one attribute, one element is significantly more important than the other
7	When two elements are compared to one attribute, one element is more important than the other
9	When two elements are compared to one attribute, one element is especially more important than the other
2, 4, 6, 8	Represents the quantitative scale when a compromise is required between the above two scales

Table 3 ranking weight of criteria layer

A	B1	B2	B3	B4	B5	Wi (weight)	consistency check
B1	1	5	3	2	2	0.37	
B2		1	1/2	1/3	1/3	0.07	$\lambda_{\max}=5.1680$
B3			1	1/2	1/2	0.12	CR=0.0375<0.1
B4				1	3	0	
B5					1	0.17	

**Table 4 ranking weight of scheme layer**

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	Wi (weight)	consistency check
C1	1	1/2											0.33	$\lambda_{max}=2.0000$
C2		1											0.67	CR=0.0<0.1
C3			1	3									0.75	$\lambda_{max}=2.0000$
C4				1									0.25	CR=0.0<0.1
C5					1	1/3	1/4	2					0.13	$\lambda_{max}=4.1596$
C6						1	1/3	2					0.24	
C7							1	4					0.52	
C8								1					0.11	CR=0.0598<0.1
C9									1	2			0.66	$\lambda_{max}=2.0000$
C10										1			0.34	CR=0.0<0.1
C11											1	1/2	0.34	$\lambda_{max}=2.0000$
C12												1	0.66	CR=0.0<0.1

**Table5 The ranking weight of the elements in the scheme layer on the decision objectives**

target	C2	C9	C1	C12	C10	C7	C11	C3	C6	C4	C5	C8
weight	0.25	0.18	0.13	0.11	0.09	0.06	0.06	0.05	0.03	0.02	0.01	0.01

**Conclusion**

The cultivation of master degree students in mechanical engineering is an important training level in higher agricultural universities, which is related to the quality of training and the reputation of the society. In this paper, the quality evaluation of mechanical specialty in Higher Agricultural Colleges and universities is evaluated, the characteristics of machinery specialty in Higher Agricultural Colleges and universities are evaluated, the corresponding evaluation system is set up, and the evaluation system of mechanical specialty of agricultural colleges and universities is evaluated, and the corresponding results are obtained.

(1) The agricultural colleges and universities, the training of mechanical specialty and the training of mechanical specialty in general engineering colleges and universities is very different. This paper establishes the evaluation method of analytic hierarchy process, and evaluates it, and draws the index of the influence factors of different weights.

(2) Establishing a practical teaching evaluation method for the mechanical specialty, and recommending the establishment of a corresponding practice training base to cultivate the practical ability of the graduate students, so as to improve their scientific research level and provide support for the construction of a high level university.

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