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Employ Ability Evaluation Based on Power Mechanical Engineering

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Abstract: With the continuous development of society, mechanical design and manufacturing technology is also making rapid progress. Power mechanical engineering major is a demand for more professional. Employ ability refers to the basic qualities of students. In order to enhance students' employ ability, this paper explores the main principles of their ability evaluation. It can be regarded as one of the most important, energetic and potential levels for a person's survival and development. Because of the complexity of technology, the employment prospects of mechanical engineering students depend on their innovation and practical ability. This paper mainly uses the survey method and analytic hierarchy process to study the employment of power mechanical engineering major. According to the survey results, the employment ability of the students in this major is above the average level, but only 5.8 percent of them have excellent knowledge ability. This falls far short of the country's needs. Therefore, it is necessary to cultivate graduates' knowledge and practical skills from these two aspects.

1. Introduction

As an important human resource, the education and employment of higher education talents have attracted much attention in the world. The teaching goal of power mechanical engineering major is to cultivate high-quality talents who can engage in mechanical design, engine and motor and other related work, and have the ability to design and manufacture various power mechanical equipment. Construction machinery safety operation situation is very serious, need a large number of high-quality personnel to operate. Therefore, it is urgent to train students majoring in power mechanical engineering.

There are many scholars who study power mechanical engineering. There are also numerous research theories on employ ability evaluation. For example, some scholars used SWTO model to analyze the employment advantages of specialized masters in mechanical engineering [1-2]. By

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analyzing the significance of innovation and entrepreneurship ability, some scholars have specifically analyzed the specific ways to improve the innovation and entrepreneurship ability of engineering college students [3-4]. Some scholars have established a comprehensive evaluation index system of college students' employ ability, which includes 9 indicators such as basic professional knowledge, professional level and innovation ability [5-6]. Therefore, the evaluation of students' employment ability needs to be carried out from many aspects. The employ ability evaluation based on power mechanical engineering proposed in this paper is specifically aimed at students majoring in mechanical engineering, hoping that students majoring in mechanical engineering can contribute to the national economy.

This paper first studies the major of power mechanical engineering to understand the employment direction of this major. Secondly, the employ ability is analyzed and modeled. Then it analyzes the factors affecting the employ ability of power mechanical engineering major. Then a capability evaluation system is designed. Finally, through the form of questionnaire survey to the students of this major related survey, and the data.

2. Employ Ability Evaluation Based on Power Mechanical Engineering

2.1. Major in Power Mechanical Engineering

The Energy machinery and engineering specialty focuses on the development of gas turbines, steam turbines, internal combustion engines, and other novel engines and their systems, and on how to safely and efficiently convert the chemical and kinetic energy of fluid fuels into power under basic principles. It includes energy, transportation, electric power, aviation, agriculture, environment and other fields closely related to national economy, social development and defense industry. The research and application fields of this major are very wide [7-8].

Power mechanical engineering is a comprehensive discipline, which covers a variety of scientific fields such as machinery, electronic technology, computer and automation. The major of power mechanical engineering is a highly comprehensive discipline with certain practical requirements and the characteristics of cultivating ability. It requires not only solid, profound and theoretical knowledge. You must also have strong hands-on skills. As a mechanical designer should have excellent and skilled technical skills. As one of the basic professional courses, power mechanical engineering and automation technology is an indispensable component subject in modern industrial production [9-10].

After graduation, students majoring in power mechanical engineering will be engaged in different types and levels of work. It not only requires them to have a certain degree of theoretical knowledge, but also must have a strong practical ability and innovative spirit. Therefore, the major of power mechanical engineering should be adjusted according to the market demand.

2.2. Employ Ability

Employ ability is a person in the process of social survival and development to adapt to the needs of the corresponding skill level, and can successfully complete the task. At the same time, it also provides the necessary labor resources for the organization, management and other related activities. The evaluation of employ ability can better understand what students have learned in school [11-12].

This paper proposes that the evaluation index of employ ability includes the following parts:

Basic quality: ability to resist setbacks and pressure, ideological quality. Academic ability:

Mastery of professional knowledge. Practical skills: interpersonal, verbal and problem solving skills. Sustainable development ability: interest, innovation and responsibility.

According to the evaluation connotation of the evaluation elements, the relationship between the elements is analyzed, and the corresponding mathematical model is established by using mathematical method. According to the influence of the elements on the employ ability, different weights are assigned. Finally, the quantitative evaluation results are obtained. Analytic hierarchy process (AHP) with a level of decomposition, the characteristics of the combination of quantitative and qualitative, it according to the complicated problem of the relationship between various factors and analysis, building the hierarchical model, thus the problem of simplification, the person's subjective judgment according to predefined criteria said in quantitative way, so as to realize quantitative analysis of the theorem of events [13-14]. When the analytic hierarchy process is used to assign the index weight in the evaluation model, it can be roughly divided into the following steps:

Firstly, the complex problems are layered and the hierarchical structure model is established. Then establish the contrast judgment matrix. Then the weight vector is calculated and the consistency is checked. Finally, the weight of each index is calculated. In order to calculate the weight, a comparative judgment matrix Q should be established, as shown in Equation (1) :

$$Q = \begin{bmatrix} 1, x_{12}, \Lambda\ , x_{1m} \\ x_{21}, 1, \Lambda\ , x_{2m} \\ \Lambda\ \Lambda\ \Lambda\ \Lambda\ \Lambda \\ x_{m1}, x_{m2}, \Lambda\ , 1 \end{bmatrix} \tag{1}$$

Calculate the sum of each column using Equation (2) :

$$S_{\mathrm{a}} = \sum_{a=1}^{m} x_{ak} (k = 1,2,3\Lambda\ m) \tag{2}$$

Calculate the average of each row of the matrix A_{a} :

$$A_{\mathrm{a}} = \sum_{a=1}^{m} \frac{x_{ak}}{S_k} (a = 1,2,3\Lambda\ m) \tag{3}$$

Through the comparative analysis of each layer, the weight value of each index can be finally obtained.

In the evaluation of employ ability, it is necessary to establish a corresponding mathematical model and analyze its advantages and disadvantages through data. Employ ability refers to the comprehensive quality that a person shows in the work practice of a certain stage. As for the workers, they can improve themselves constantly through their own efforts, so that they can adapt to the needs of the society. Therefore, it is of certain significance to evaluate workers [15-16].

From a psychological point of view, people always want to maximize the effectiveness of their work. And this belief is determined by a number of factors. The first thing to do is to find out whether the interns are satisfied with the positions provided by the company and their own abilities. The second is to determine whether the evaluation index system and scoring methods are reasonable. After analysis, the results are obtained, and then the corresponding weight value is selected according to the actual situation to calculate the comprehensive score, and the ranking level. Finally,

according to the score ranking level, we can judge the ability that the person needs to have in the future work, so as to lay the foundation for making the next development plan [17-18].

2.3. Employ Ability in Power Mechanical Engineering

Perhaps power mechanical engineering students consider their employ ability to be above average. However, for business managers, the overall employ ability of this group is average or low. As an engineering major, mechanical engineering has a certain degree of loopholes in other fields of humanities and social sciences, economic management. However, for enterprises, science and technology should serve the profits of enterprises, and professional and technical personnel should also provide support for enterprise management. China has not yet formed a perfect mechanism for cultivating the employ ability of mechanical engineering graduates.

In order to improve the employ ability of students majoring in power mechanical engineering, it is necessary to improve the employ ability from individual, school, enterprise and government.

At the individual level, students should consolidate their basic abilities. At the school level, the quality of teachers can be improved and the teacher evaluation system can be improved. Schools should also optimize the curriculum of power and mechanical engineering and improve the internship system for students. Schools should pay attention to the practical courses of engineering students and carry out practical teaching. In addition, long-term friendly relationships should be established with relevant enterprises so that graduates can have a good internship environment and improve their working skills. In addition to the cultivation of employ ability, we should also strengthen the guidance of students' career planning. Enable students to define their careers, prepare for their future, and learn new skills and knowledge. At the enterprise level, it is necessary to establish a student internship mechanism. During the internship period, students will be assessed for their employ ability. In addition, based on employ ability, set relevant recruitment requirements. In addition to these, we should also establish the consciousness of talent training, improve the new training system. The government should further promote the reform of the university education system and improve the talent employment market system and legal provisions.

2.4. Design of Employ Ability Evaluation System

The graduation employment evaluation management system adopts B/S three-tier system structure. When designing the system in this paper, according to the classical theory of software system, follow the idea of top-down decomposition and gradual refinement, structural design. Firstly, the system is decomposed hierarchically according to the IPO diagram of the system, and then the decomposition is refined layer by layer, so that each layer is more detailed and detailed to describe all the functional modules of the system. In order to simplify the complex problem, the method adopts the selection rule of preferential production and the representation of reasoning method as simple as possible. And the system can call knowledge base, model base and inference rules at will, so as to provide users with reliable decision results. The system can be divided into four parts: testing subsystem, employ ability evaluation subsystem, information management subsystem and system management subsystem, as shown in Figure 1:

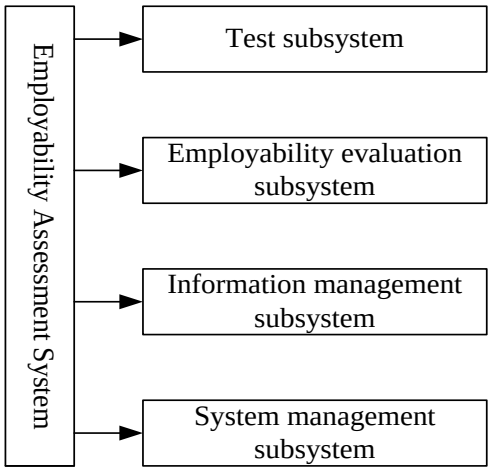


Figure 1. Employment ability evaluation system module

The main function of the test subsystem is to test the students who take the employ ability test and provide the test object with the Web page. The employ ability evaluation subsystem is the core function module of this system. Its function is to calculate the six basic ability scores of students and the fitness of each position set by the enterprise according to the different ability weight requirements of each position given a recruitment enterprise. The system management subsystem manages system rights. Only users with corresponding operation rights can log in to the system and perform corresponding service operations, including user creation, permission allocation, and security authentication. This information management subsystem mainly involves two kinds of basic information of students and employers. The function of the management of basic information of students is to add, modify and update the basic information of students.

3. Relevant Investigation of Employ Ability

3.1. Design of Employ Ability Questionnaire

This paper focuses on the employ ability of power mechanical engineering major questionnaire design. Before designing the questionnaire, the factors affecting the employ ability were studied, and then the related questionnaire was designed.

The questionnaire includes the following aspects: The gender, grade and learning interest of the respondents were analyzed. The practice experience, knowledge mastery and basic skills of the questionnaire subjects. Questionnaire respondents' sense of responsibility, problem-solving ability and team spirit.

3.2. Survey Objects and Distribution of the Questionnaire

The subjects of this questionnaire survey are students majoring in power mechanical engineering in local universities. There were an equal number of men and women in the survey, freshmen to seniors. This questionnaire was sent by E-mail, QQ and other means using existing electronic equipment and network channels. A total of 300 questionnaires were distributed, and 295 valid questionnaires were recovered.

3.3. Statistical Analysis

This survey analyzes the employ ability scores of mechanical engineering students. Taking the whole group as the analysis object, the overall employ ability and various factors of the employ ability are evaluated. This paper counts the proportion of the number of people surveyed in knowledge mastery. In addition, the employ ability was analyzed by letter rating.

4. Analysis of the Survey Results Related to the Employ Ability of Mechanical Engineering Students

4.1. Degree of Mechanical Engineering Professional Students' Professional Courses

Firstly, this paper investigates the students' mastery of mechanical engineering professional knowledge, which is divided into five grades: very unable, not very able, general, relatively able and very able. According to the survey results shown in Table 1, most of the students said that they were able to master the professional knowledge they had learned in general or relatively well.

Table 1. The mastery of mechanical engineering professional students' professional courses

	Number of people	Percentage(%)	Valid Percent(%)
Very impossible	4	1.33	1.36
Not too can	12	4	4.08
General	123	41	41.7
More can	131	43.67	44.41
Very can	15	5	5.08

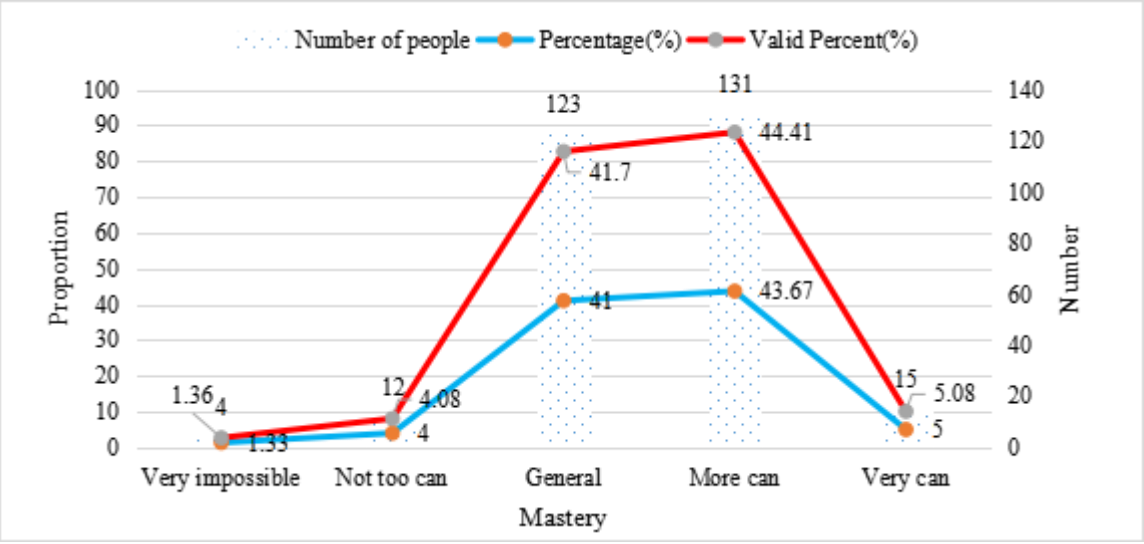


Figure 2. The mastery of mechanical engineering professional students' professional courses

As shown in Figure 2, we can see that the number of students who generally master and relatively master professional knowledge is 256, accounting for 85% of the total number surveyed.

This shows that the students of this major can achieve a basic level of understanding and application of knowledge. In addition, a small number of people are still unable to master what they have learned, indicating that only a small number of people are not interested enough in their major.

4.2. Employ Ability Evaluation of Mechanical Engineering Professional Students

In this paper, the students' employ ability evaluation is divided into five grades, from high to low is ABCDE. From the students' basic ability, academic ability, practical ability and sustainable ability of the four aspects of the narrative. Among them, students' sustainability (interest and lifelong learning) received the highest rating of excellent (26.8 percent). The specific situation is shown in Table 2:

Table 2. Employment ability evaluation of mechanical engineering professional students

	E	D	C	B	A
Basic quality	0.7	7.8	31	46.5	15
Academic ability	0.8	17.7	43.6	32.1	5.8
Practical ability	0.8	10.3	40.7	37.6	10.6
Sustainable development capacity	0.4	2.8	20	50	26.8

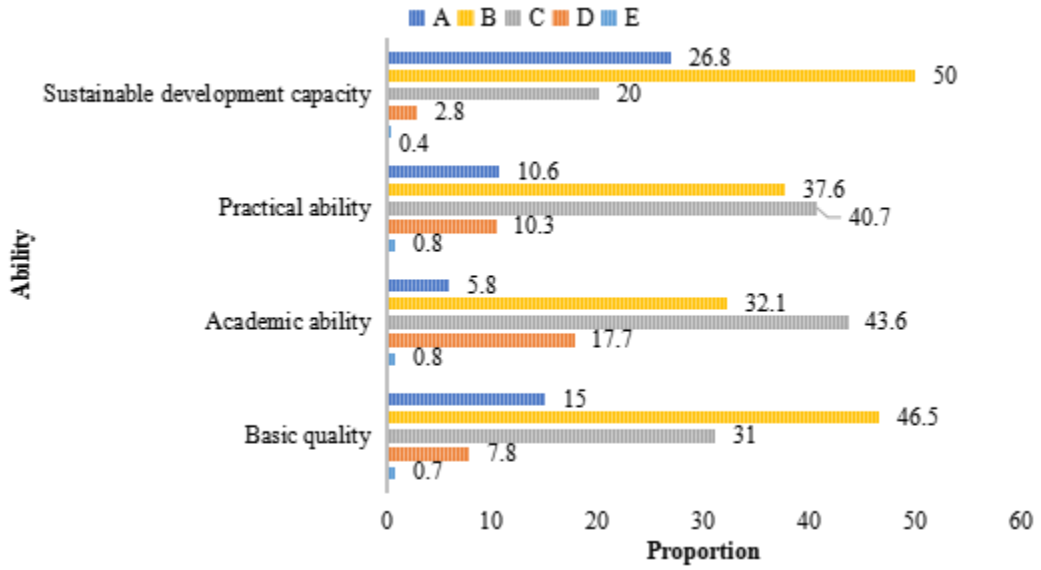


Figure 3. Employment ability evaluation of mechanical engineering professional students

As shown in Figure 3, it can be seen that students' sustainable ability is the highest score in the employ ability evaluation of this major. This also shows from the side that interest is the biggest power of learning. In addition, throughout the employment ability evaluation index data are in the above level. That means the way students are taught has improved, so standards are rising.

5. Conclusion

With the rapid economic development of our country, the competition between all walks of life

is increasingly fierce. This paper uses the analytic hierarchy process to evaluate the employ ability. By calculating the weight of each index, the influence degree of each factor on the employ ability is obtained. This method takes the comprehensive score as a reference, and on this basis establishes a set of employ ability evaluation system model for students in different regions, different time periods, different industries and different stages. The results of employ ability evaluation reflect the level of learning and practical skills of students in school. Therefore, the evaluation system can calculate the student's performance in all aspects and judge whether the student has the knowledge, technology, management and other basic qualities required by the corresponding occupation.

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Data Availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

Conflict of Interest

The author states that this article has no conflict of interest.

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