

# AN INVESTIGATION OF LIBRARY SERVICE TO MECHANICAL DISCIPLINE UNDER THE BACKGROUND OF APPLIED UNIVERSITY CONSTRUCTION

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**Abstract:** This paper discusses the importance of improving the practicality and applicability of mechanical manufacturing technology education in local undergraduate universities. The paper argues that the traditional teaching mode of imparting theoretical knowledge is no longer sufficient, and that a more practical and hands-on approach is needed. The paper proposes a number of suggestions for improving the teaching content and methods of "Fundamentals of Mechanical Manufacturing Technology" for applied undergraduate students.

**Keywords:** mechanical manufacturing technology education, applied undergraduate students, practicality, applicability, teaching content, teaching methods

## Introduction

With the rapid development of our economy and the continuous expansion of manufacturing industry, manufacturing industry volume is becoming larger and larger. However, at present, there is a shortage of technical talents in the field of machinery manufacturing, and most machinery manufacturing enterprises are facing the pressure of technological upgrading, requiring more practical technical talents. Traditional mechanical manufacturing technology education pays attention to the imparting of theoretical knowledge, but in practical application, students lack of practical experience and skills, cannot be competent for practical work. Therefore, how to improve the practicality and applicability of mechanical manufacturing technology education has become an urgent problem to be solved in the current mechanical manufacturing technology education. It is an important measure of national talent training strategy for local undergraduate universities to cultivate applied talents<sup>[1]</sup>. Under the guidance of provincial economic policy, it is an important measure for local colleges and universities to transform into applied universities in order to adapt to the development of local regional economy. At present, many local colleges and universities are in a critical period of transformation. In order to cultivate high-quality talents suitable for social and economic development, we must fundamentally change the previous book teaching mode to meet the current demand for talents in the manufacturing industry.

Foundation of mechanical manufacturing technology is a basic course in the direction of mechanical manufacturing technology. It is a major course for students of mechanical engineering, whose employment scope involves machinery, electronics, computer and other fields. At present, our manufacturing industry development has been chasing foreign developed countries, and the demand for technology direction talent is also increasing.

Therefore, the teaching content and teaching methods of "Fundamentals of Mechanical Manufacturing Technology" for applied undergraduate students also need to be constantly improved and perfected in order to cultivate high-quality talents to meet the needs of society.

### **1. The necessity of teaching reform in the direction of mechanical manufacturing technology under the training of applied talents**

The foundation of mechanical manufacturing technology is an important branch of mechanical engineering. Its training goal is to cultivate applied talents with the ability of mechanical manufacturing process design, process planning, process optimization and so on. The rapid development of manufacturing industry makes more and more talents in the direction of technology. Therefore, it is particularly necessary to reform the direction of mechanical manufacturing technology under the training of applied talents. Take mechanical design, manufacturing and automation as an example:

(1) Students trained by traditional teaching methods<sup>[2]</sup> have been unable to adapt to the current development of manufacturing industry. General machining factories need to spend a lot of time on training after recruiting graduates of relevant majors to adapt to machines with higher technical requirements. The teaching reform of mechanical manufacturing technology can better adapt to the market demand under the training of applied talents. In the teaching environment, in addition to the classroom teaching, increase the machine workshop consistent with the actual factory, to achieve the unity of theory teaching and practice of innovative teaching. Cultivate students' practical ability and innovation ability [3] to meet the market demand.

(2) Students trained in the past teaching have poor practical ability. Although they have strong theoretical knowledge, they lack experience and can not be quickly combined with the rapid development of artificial intelligence machines at the present stage, which is easy to cause market dissatisfaction with college students, and thus affect the employment of students majoring in mechanical technology. Education reform can make students pay more attention to the cultivation of practical ability, pay more attention to the cultivation of innovation ability, improve students' comprehensive quality and competitiveness, so as to better adapt to the needs of the job market. (3) The teaching reform of mechanical manufacturing technology under the training of applied talents<sup>[4]</sup> can promote the improvement of teaching quality. Education reform can make teaching closer to the reality, pay more attention to practical operation, pay more attention to the cultivation of innovation ability, so as to improve the quality of teaching, so that students can better grasp the knowledge and skills of mechanical manufacturing technology, and lay a solid foundation for their future career development. To sum up,

It is very necessary to reform the teaching of mechanical manufacturing technology under the training of applied talents. It can better adapt to the market demand, improve students' employment competitiveness, and promote the improvement of teaching quality, so as to make greater contribution to the development of manufacturing industry and personnel training.

### **2. New teaching method, new practice, new assessment to build mechanical manufacturing technology basic education reform system**

The construction of basic course of mechanical manufacturing technology aims to cultivate students' cognitive ability, practical ability and practical operation ability for process direction, change the previous method of

indoctrination teaching and examination of paper version of students, and promote the cultivation of students by means of increasing ideological and political education<sup>[5]</sup>, opening up the second classroom and school-enterprise joint examination<sup>[6]</sup>.

### ***3.1 Construct ideological and political education system from the starting point of majors***

On May 28, 2020, the Ministry of Education issued the Guidelines for Ideological and Political Development in Higher education Courses. Issuing and implementing the Outline and comprehensively promoting the ideological and political construction of college curriculum is a strategic measure to carry out the fundamental task of cultivating morality and people. Value building is the most important task in the "trinity" talent training goal of value building, knowledge imparting and ability training. As the main course in the direction of mechanism and technology, the foundation of mechanical manufacturing technology plays a vital role in the quality of students of this major. Therefore, relevant departments and every professional teacher should attach great importance to it and actively invest in the teaching reform. It is necessary to strengthen the training of professional teaching quality, and be good at digging out the stories of scientists and engineers related to the course from the major itself, including the history and trend of the development of the major at home and abroad. These contents should be innovatively embedded in the teaching content, and timely taught to students, so as to gradually form a complete ideological and political teaching system.

(1) Fundamentals of mechanical manufacturing Technology is the main professional course of mechanical technology. As a necessary course for mechanical students, course professors should try their best to integrate ideological and political courses into it. In practice, the author explores stories, compares the technological gap at home and abroad, tells the national technological development history since the founding of the People's Republic of China, makes students deeply understand the backward situation of basic manufacturing industry, connects majors with stories, educates students on the importance of ideological and political courses, and improves students' interest in learning.

(2) Take students as the center, use the national media related to the major as the education carrier, such as the CCTV broadcast "Craftsmen of a Big Country", to tell students the importance of processing technology in the national heavy industry, and give full play to the role of ideological and political education in professional courses from the perspective of social responsibility and values[7-9].

### ***3.2 Improve the innovation degree of campus practice class***

According to the syllabus, students majoring in mechanical engineering should have metalworking practice in the fourth and fifth semesters. The main purpose is to let students understand several processing methods and technological processes of mechanical processing and manufacturing, improve their practical operation ability, and deepen their understanding and mastery of professional knowledge. In the past, due to the limited conditions of the equipment, the internship of students is urgent, and they cannot fully understand the operation process of machining equipment in a short time. Therefore, the equipment can be updated, and the practical teaching reform can be carried out from the aspects of multi-type rotation, high-quality assessment and so on.

(1) The basic internship jobs for mechanical students include turning milling, planing and grinding pliers, which are the most basic processing methods in manufacturing industry. The school where the author works has used

several kinds of equipment to carry out long-term practical teaching for mechanical students, but the current equipment is no longer suitable for the training of the rapidly developing manufacturing industry. Robot automation programming and processing and artificial intelligence have become the hot words in the manufacturing industry at the present stage. Therefore, new intelligent processing equipment is added to carry out practical education for students together with old equipment. It can let students understand the use history of mechanical processing equipment, and can also be used as a part of ideological and political education.

(2) Students are assessed according to their performance in the process of practice and the products made by the equipment. In the past assessment, products were simply scored by means of measuring tools. High quality assessment not only from the product requirements, but also from the novelty of the product, practical assessment.

### ***3.3 School-enterprise cooperation to build a new practice assessment system***

The ultimate purpose of teaching is to let students find a suitable job according to their major. As a professional course, the basic course of mechanical manufacturing technology must be integrated with practical processing to improve the usefulness of the course. Manufacturing factories are the best places to test the effectiveness of students' courses and provide a learning platform for students.

Paper version examination cannot measure the integrity of students' theoretical knowledge, especially in local colleges and universities. The practice of learning is particularly lacking in local universities. The machining operation inside the factory can increase students' practical experience. Long-term practice can increase students' understanding of this major and provide a good foundation for future employment. The internal assessment of the enterprise can be operated according to the employment experience of the enterprise, and the products processed by students can be strictly screened and evaluated according to the market demand. The evaluation results can be directly incorporated into the internship results of students. The new practice method can include practice teaching, experiment teaching, project practice and so on. The new assessment methods can include comprehensive assessment, project assessment, practice assessment and so on. Through these assessment methods, students' learning results and practical ability can be evaluated more comprehensively. At the same time, these assessment methods can also promote the cultivation of students' autonomous learning and self-evaluation ability. To sum up, the new practice and new assessment can jointly promote the construction of mechanical manufacturing technology basic education reform system, promote the overall development of students and improve teaching quality.

## **4. Effective progress has been made in the application of educational reform practice system**

### ***4.1 Ideological and political education has remarkable effects***

Through watching videos, telling stories, telling characters and other methods, ideological and political education is conducted for students to guide them to sublimate from personal feelings to the level of national needs, cultivate students to have a sense of professional responsibility, take seriously their major attitude, and establish a correct career view. After receiving education, students can actively participate in classroom activities, and take the initiative to use machine tools to complete teaching tasks in the process of campus practice, and creatively make their own products according to their knowledge. This kind of ideological and political education in the direction

of engineering arouses students' patriotic feelings from the spiritual level and puts the great rejuvenation of the Chinese nation into practice in practical work and life.

#### ***4.2 The new practice system promotes talent training and student employment***

Through the unification of on-campus and off-campus parallel practice, students can not only think independently to solve professional problems, but also learn useful professional knowledge in work and find ways to make up for their own shortcomings in work. This reform of the practice system cultivates talents to meet the market demand for the society. Students have a stronger foundation to go out and have the ability to apply what they have learned and integrate knowledge and practice.

#### ***4.3 Education reform system promotes professional construction and scientific research innovation***

Educational reform promotes scientific research and innovation, and practical education is mostly carried out in factory workshops. In this process, practical processing can be integrated with scientific research and innovation, and the two complement each other. With the continuous innovation of technology, manufacturing technology is also increasing, traditional process research is no longer applicable to the current manufacturing mode, turning, milling, planing, grinding, pliers and other processing methods cannot meet the high precision parts processing requirements, intelligent manufacturing has been the absolute trend, the combination of online and offline teaching, innovation and entrepreneurship mode training can promote professional construction and scientific research innovation[10-12].

### **5. Conclusion**

Based on the needs of the construction of local application-oriented undergraduate universities, this paper takes students as the center, integrates ideological and political education, on-campus and off-campus practice, and new assessment into the whole learning process of students' course, and builds a scientific application-oriented talent training system. Students are educated on ideological and political education through watching videos and telling stories. By constructing the teaching methods of in-school practice and off-campus practice, the classroom theory and practical operation are combined together to cooperate with the policies and guidelines of application-oriented talent training put forward by the school. It provides theoretical and practical support for training high-quality applied talents, and provides reference experience for local applied undergraduate universities' mechanical teaching reform.

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