

# Research on the Cultivation of Students' Professional Ability in Practical Teaching of Mechanical and Electrical Specialty in Secondary Vocational Schools

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**Abstract:** *Secondary vocational education provides vocational education in senior high school. Strengthening secondary vocational education can cultivate more skilled and high-quality talents for the society. Mechanical and electrical specialty belongs to the integration of mechanical and electronic disciplines, and its future employment scope is very wide. Students in secondary vocational schools want to be invincible in the fierce employment environment, and they must master their own perfect theoretical knowledge and strong professional practice ability in order to stand out in the selection at all levels. This thesis mainly explores the importance of cultivating students' professional ability, existing shortcomings and effective optimization measures in the practical teaching of mechanical and electrical specialty in secondary vocational schools.*

**Keywords:** *mechanical and electrical major, Practical teaching, Vocational ability training*

## 1. Introduction

Mechanical and electrical specialty in secondary vocational colleges has trained a large number of skilled talents for the country. In order to help students master more professional theoretical knowledge and operational skills, teachers will join practical courses in teaching, so that students can apply their theoretical knowledge learned in class to real life, improve their professional ability and lay a good foundation for their future career development. However, there are still various problems in practical teaching, which affect the cultivation of students' professional quality. Teachers in secondary schools need to think about how to use professional practical teaching to strengthen students' professional ability.

## 2. The importance of strengthening the cultivation of students' professional ability

### 2.1 It is conducive to the formation of a correct self-awareness

To strengthen the cultivation of students' professional ability, it is necessary to first make a good career plan, guide students to form a correct self-awareness of their future development, understand own development advantages, their own shortcomings and potential characteristics, and have an all-round evaluation of their own values to avoid the situation of high or low in the follow-up employment process.

### 2.2 Cultivate students' personality and enhance their employment competitiveness

Traditional education mainly adopts the idea of elite education, paying too much attention to students' mastery of theoretical knowledge and their common development, but ignoring students' individualized cultivation. As a result, most of the students trained by the school have high diplomas low abilities, which does not meet the innovation and development needs of enterprises, and also students' future employment, and students' adaptability to social life is not strong [1]. Strengthening the cultivation of students' professional ability can continuously improve students' mastery of knowledge, ability and quality and deeply tap students' development potential. It can also cultivate students' innovative thinking and awareness, enable students to have the ability to start their own businesses and have stronger employment competitiveness.

### ***2.3 Achieve convergence with social enterprises and reduce the occupation adaptation period***

When cultivating students' professional ability, secondary vocational colleges need to grasp the demand of modern enterprises and social talent market for technical talents on the basis of the development needs of enterprises. They are also supposed to optimize the curriculum system of professional ability training and strengthen the connection between education and enterprises. What's more, it is of great importance to realize the teaching system of two-wheel drive of secondary vocational education and enterprise training, make secondary vocational education more efficient, and help students shorten their professional adaptation period after entering society and adapt to social professional life quickly.

### ***2.4 Train students to have a correct professional outlook***

Strengthening the cultivation of students' professional ability can guide students to have a correct view of career choice and career, accurately position their future development, scientifically and reasonably design their career according to the current needs of enterprises and their future career needs, arrange their own time and resources for studying in school, and enhance their learning ability. Vocational ability training can realize scientific and reasonable planning of people and occupations, help contemporary secondary vocational school students to choose their jobs freely and promote students' sustainable development.

## **3. Existing problems in practical teaching of mechanical and electrical specialty in secondary vocational schools**

### ***3.1 Single teaching mode***

For a long time, the traditional teaching concept of attaching importance to theory and ignoring technology has influenced vocational education in China, which has led some teachers to think that the course teaching should focus on theoretical knowledge learning and ignore the training of vocational technology. In the process of training, students are not allowed to apply their theoretical knowledge to practice, and theoretical teaching and practical teaching are not combined, which leads to the fact that the learning content of port and shipping machinery in secondary vocational electromechanical specialty does not conform to the development form of the industry [2]. In the practical teaching of mechanical and electrical specialty, although it contains a lot of practical teaching content, it lacks excellent practical design, and the teaching content is one-sided and the teaching mode is single, which can not really stimulate students' interest in learning.

### ***3.2 Theory is out of touch with practice***

Compared with other disciplines, the mechanical and electrical specialty of port and shipping machinery is more practical, and the mechanical and electrical specialty itself is a characteristic specialty of technical education in secondary vocational colleges, so it is necessary to strengthen the cultivation of students' practical operation ability. In practical teaching, teachers should focus on students' mastery of practical skills, so that students can deeply understand the content of learning and make clear the characteristics of future enterprise development. If secondary vocational schools do not pay enough attention to practical teaching, and do not have in-depth exchanges and cooperation with modern enterprises related to electromechanical, port and shipping machinery, they will not be able to provide students with a broader development platform, and theory and practice will be separated. Students have learned professional knowledge, but they have not applied it to practice, and teaching characteristics and market demand have not been effectively linked together, which will affect their future innovation and development.

### ***3.3 Insufficient teaching software and hardware equipment***

Due to the limited budget of some colleges and universities, the software and hardware facilities are not updated in time, and the equipment models are too backward, which affects students' learning and development. Teachers' teaching tasks are heavy, and they don't have enough time and energy to put into production practice, so the team building of double-qualified teachers has become a difficult task. China's industry and manufacturing industry are constantly innovating and developing, and the demand

for skilled talents and high-quality workers is increasing. If there is a lack of excellent teachers, it will not be possible to train supporting skilled workers for the development of the times, which will affect the sustainable development of society. The application of port and shipping machinery in mechanical and electrical specialty is very strong, but the teachers of this major are scarce, and the importance of practical teaching has not been realized in teaching. Some secondary vocational schools also lack sufficient funds to establish mechanical and electrical practice bases, which leads to the ineffective development of practical teaching and affects the improvement of students' practical ability.

#### **4. Measures to cultivate students' professional ability in practical teaching of mechanical and electrical specialty in secondary vocational schools**

##### ***4.1 Stimulate students' interest in learning***

Students in secondary vocational schools mainly come from junior high school graduates and students with the same academic ability as junior high school graduates. These students are not mature enough, and they have poor autonomous learning ability. Also, they have not developed good study habits and are not enthusiastic about participating in learning activities. Therefore, in the practical teaching, teachers need to guide students to correctly understand the importance of carrying out practical training courses for mechanical and electrical majors. They also need to encourage students to be interested in the content of practical training before they can actively participate in the next knowledge learning [3]. Teachers should adopt more colorful professional teaching forms when carrying out practical teaching, avoid a single teaching mode, and make students feel boring. By improving the diversity of classroom teaching knowledge, modes and methods, students' learning potential can be deeply stimulated in the process of practical training. What's more, students' innovative consciousness and ability can be cultivated. More importantly, students can independently explore and learn related knowledge points, and their professional ability can be improved.

For example, when learning the knowledge point of "Installation and Maintenance of Electric Drive Control Circuit", teachers first lead students into training bases and training classrooms, divide students into different study groups, and let the study groups check whether their costumes are qualified or not. Students can relieve the pressure brought by the training environment by greeting each other and checking. Before the new curriculum teaching, teachers use the way of knowledge question and answer, so that students can review the knowledge points they have studied, which can consolidate their knowledge and guide the development of new teaching courses. In the practical teaching, there are errors due to the unstable mastery of previous knowledge, which affects the actual effect of students. There are differences in practical training ability and operational skills between students. Teachers can know the students' learning status in advance, so that students who have completed in advance can guide students with relatively poor ability. First of all, the completed students can supervise the operation of famous students to ensure that both sides can complete the normative operation. Through this practical teaching method, students' interest in learning can be effectively enhanced and their professional ability can be strengthened.

##### ***4.2 Increase investment in equipment and cultivate innovative ability***

The equipment in most secondary vocational schools is too old. Due to the neglect of practical teaching, or for reasons of cost saving, schools are reluctant to introduce advanced machinery and equipment, which leads to the fact that the machinery and equipment used in the teaching of port and shipping machinery for mechanical and electrical majors are not the equipment models used in the front-line work of the current industry, and the number of equipment in teaching is insufficient, so that every student can not participate in practical teaching, which leads to the students' weak practical ability and affects the final actual effect. Lack of the most advanced equipment, students can only watch the training process demonstrated by teachers during the training, and students' creative ability is not brought into play, which affects the improvement of students' professional ability.

In view of the lack of training equipment and the lack of advanced equipment in the school, the staff should make timely adjustments, purchase and lease advanced mechanical equipment, especially the equipment that students can use in training, so as to create a high-quality training environment for students and deeply stimulate their exploration and creativity in practice. In the process of using new equipment, students can be promoted to take each training course seriously. The participation in the practical training of port and shipping machinery and equipment for mechanical and electrical majors

in secondary vocational colleges can help to improve students' professional skills and enable students to deeply tap their potential under the high-quality learning environment and advanced teaching resources. Meanwhile, students can become high-quality talents who know how to innovate and advance by training. It can also continuously improve students' professional ability.

#### ***4.3 Improve students' professional ethics***

Secondary vocational school students are relatively young, and after several years of professional knowledge learning, their abilities in all aspects will be improved. However, compared with students with high-level academic qualifications, students in secondary vocational schools still have many shortcomings in learning ability and professionalism. Professional ethics accomplishment is also an important part of professional ability. Teachers should pay attention to the guidance and teaching of students' professional ethics in actual teaching, constantly strengthen students' professional ethics accomplishment, so that students can develop good moral concepts in the future growth and development process, reduce the problem of going wrong in their career, and guide students to develop faster and better. For example, at present, some employers of port and shipping machinery pay more attention to whether employees' moral concepts and comprehensive qualities meet the standard requirements, in addition to examining their theoretical knowledge, and both ability and political integrity are the employer's standards. Students in secondary vocational schools may fail to keep up with their moral quality after mastering professional skills. Even if students find suitable jobs after graduation, they will be dismissed by the unit after a period of time, which just shows the importance of cultivating professional ethics.

Professional ethics will have a great impact on a person's work ability and work efficiency, and people pay more and more attention to professional ethics, and its importance even exceeds the requirements for a person's ability. With the continuous innovation and development of society, social posts also require employees to have strong professional quality and professional ethics. Therefore, mechanical and electrical teachers should pay attention to the cultivation of professional ethics and quality while cultivating students to master various skills. In practical teaching, teachers should consciously set up some students with both abilities and qualities to become learning models, play a leading role among students, and guide students to improve their self-quality while attaching importance to skills and knowledge learning. In the process of knowledge teaching, professional ethics should also be brought into the process of ability assessment to attract students' attention.

#### ***4.4 Improve the practical teaching scheme***

In the practical teaching of mechanical and electrical specialty in secondary vocational schools, teachers can carry out teaching work based on projects, so that students can master various knowledge points while completing project tasks, stimulate students' interest in learning, exercise students' practical ability, and achieve the teaching effect of combining theory with practice. Teachers should first make a practical teaching plan, in order to achieve the ideal teaching state, understand students' actual learning needs and learning characteristics, and make students change from passive learning to active learning, so as to achieve the learning purpose of applying what they have learned.

(1) The teacher first arranges the tasks of the port and shipping machinery project for the students, so that the students can know what the tasks need to be completed. What knowledge should be used to complete this task, so as to achieve what kind of learning effect.

(2) After accepting the task, students have teachers or set up their own study groups, and the members of the group cooperate to complete the project tasks, and first agree on a scientific and reasonable work plan.

(3) In the follow-up stage, in order to help students complete the project tasks quickly, teachers can provide appropriate guidance in the process of students' inquiry, let students watch carefully through demonstrations, help students solve problems arising in their studies, and guide students to gradually complete tasks independently.

(4) After the students finish their tasks, teachers should check the students' training results and lead them to conduct self-evaluation, self-summary, interact with each other in the study group, or give opinions among the members of the group, so that students can understand their own problems in learning and master the solutions.

#### **4.5 Strengthen school-enterprise cooperation**

The state advocates the development of education reform towards quality education. Therefore, secondary vocational colleges should strengthen school-enterprise cooperation in education reform, provide students with more advanced talent training mode through school-enterprise cooperation mode, and improve their comprehensive quality level. The cooperation between schools and enterprises can develop a more advanced school-running model, which meets the needs of market and social development. Schools can get financial and technical support from enterprises, and enterprises can also cultivate professional talents who can quickly adapt to their jobs. The knowledge of port and shipping machinery in electromechanical specialty is very practical. Enterprises can provide practical platforms for students. By strengthening school-enterprise cooperation and actively discussing with enterprises, schools can seek practical jobs for students, which greatly promotes the innovative development of vocational education, strengthens students' mastery of practical skills, and also provides more theoretical learning platforms for enterprises, which greatly stimulates students' enthusiasm for learning. Electromechanical teachers and electromechanical leaders of enterprises can assign tasks to students at the same time, so that students can apply what they have learned.

#### **5. Conclusion**

In the practical teaching of mechanical and electrical specialty in secondary vocational schools, we should pay attention to the stimulation of students' learning enthusiasm, offer a series of diversified practical training courses for students, and constantly strengthen students' mastery of mechanical and electrical technology and professional ethics in the mechanical and electrical industry, so as to be more adaptable to future work and guide students to have a broader development space.

#### **References**

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