Research on Method of Teaching Reform of Metalworking Practice in Colleges and Universities

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Abstract. Metalworking practice is required a course for students of engineering colleges, is the study of the application of theoretical knowledge to practical work, is an effective way to cultivate students' ability and creation ability. But the traditional teaching mode in there is the deficiency of the teaching mode and teaching process, a serious impediment to its role in the metalworking practice. Based on this, this article from the teaching content, teaching mode, teacher team construction, ability training and combines theory and practice of several aspects, such as put forward the measures should be taken in the process of teaching reform, in order to improve students' comprehensive quality, enhance the students' engineering practice ability, cultivate students' innovative consciousness and innovative spirit to provide the reference.

Keywords: Metalworking practice; Teaching reform; Teacher team.

1. Introduction

At present, with the continuous development of machinery manufacturing, and constantly have new material, new technology, new technology popularization in the machinery industry production. The traditional mechanical manufacturing technology already cannot satisfy the needs of industrial production [1]. Accompanying with the development of industrial manufacturing, the college education mode has also changed, from the original elite to affordable mode. Metalworking practice is closely related to mechanical manufacturing discipline, is cultivation engineering student beginning ability and its development and the creation ability important subject. But traditional metalworking practice has been behind the development needs of The Times, to train high quality applied talents, must solve the problems existing in the traditional metalworking practice teaching, teaching reform is imperative[2].

2. The role of metalworking practices in talent cultivation the teaching method.

Metalworking practice is an important learning process, students during the period of school, in practice the students experience the process of the performance of various materials, getting to know all kinds of machine tools and machining method, mastered all kinds of equipment operating essentials, students' observing ability, thinking ability, self-learning ability, comprehensive utilization ability, practical ability and creative ability and ability to adapt for the future work are exercise, students can be found that the problem, ask questions, and through our own efforts to solve the problem.

2.1 Guided by social needs and improve the students' engineering practice.

Machining is one of the pillar industries of our country, in the automotive, mining, shipbuilding, electronics and other fields are widely used. Industrial products gradually tend to be more diversified and complicated, industrial product diversification and complication gradually, period shortens product design process, which requires the designer with higher design ability and the ability to respond to market. Metalworking practice, we should make students understand the machinery industry development trend both at home and abroad and the social demand for industrial talents, should not only master professional knowledge, but also to focus on the industry trend of industrial development, lets the student realize the machinery industry development and the economic, social,

environmental, and the close relationship between the other industries, improve the students' engineering practice quality.

2.2 Using the theory of metalworking practice will be major combined with practical production.

Metalworking practice is the combination of professional theoretical knowledge and practical production. Students learned through practice the knowledge of professional knowledge into practical application [3]. Students in the classroom are mechanical design, mechanical principle, mechanical processing and other professional theory knowledge, have certain gap, but the theory and practice need to convert theory into actual productivity. To put theory into practice, in practice, students can find my own shortcomings, which in turn in theory to enrich ourselves. Through internship can reach the role of theory and practice to promote each other, enhance students' competence in all aspects.

2.3 To improve students' analysis, problem solving skills.

Metalworking practice requires students through practical work processing forming [4]. Students reached for knowledge in the process of collecting, sorting, summary, finally completed his work, students gain a sense of achievement, in the process of the whole and exercise the ability to analyze and solve problems. Metalworking practice is to put the students into a can know how to design, technology, processing and manufacturing; will study compound high-quality talent's important way.

3. The problems existing in the traditional teaching

For a long time, is paid attention to only commonly exist in the metalworking practice operation training, neglecting the engineering quality and ability, only pay attention to the side of internship students when the workers, and ignore when engineers or when the project management side of the phenomenon. Teaching mode is simple, the lack of modern teaching means, has been using "teach a operation" single way, cannot give full play to the initiative and creativity of students.

3.1 The obsolete teaching content, methods and backward.

With the new technology, new technology, new equipment, modern industrial manufacture not as a simple production, processing, manufacturing, but form the manufacturing model system. New manufacturing mode oriented manufacturing system and advanced management methods are: computer integrated manufacturing systems, lean production and agile manufacturing, green manufacturing, dispersed network manufacturing, concurrent engineering, total quality management, management information systems and intelligent manufacturing system, etc. But domestic colleges and universities of metalworking practice teaching mode is still the master train an apprentice, from the drawings, material selection to process, the content of each part are teachers, students only need to do as what is ok, the mechanical operation in a passive state, lack of thinking and innovation space. Metalworking practice and theoretical teaching content separation disconnect, because little effect of theoretical knowledge, in the practice process of middle school students was piecemeal process knowledge and simple operation skills.

In recent years, although a part of the reform of the metalworking practice teaching in colleges and universities, the teaching content of the new elements into the science and technology, but the overall progress is slow, there was no real change. Metalworking practice is the practice teaching, the main training is operational skills, and imparting theoretical knowledge is often neglected, also relatively backward teaching methods, classroom teaching with multimedia teaching, and then stays on the blackboard, chalk and metalworking practice teaching on the teaching model, rarely use modern teaching methods.

3.2 Each type of work is independent of each other

As a result of college expansion, the number of students increased dramatically, but teaching equipment failed to be added. Internship sites or to a serious shortage of equipment. In order to make the limited conditions of the internship and practice equipment are fully used, students in the process of metalworking practice group, according to the type of work cycle on the machine operation, so that we can make full use of the practice equipment, convenient for management. But this kind of

management pattern between different professions are independent of each other, the students master are separate skills, skills cannot be digest, a certain distance with the production practice. Professional different, arrangement of the internship is basically the same, without combining the professional knowledge and practice, to highlight the professional advantage. Because of a shortage of colleges and universities to practice equipment investment, cause the outdated equipment, aging, advanced equipment failed to enter the campus. Metalworking practice most of the students think is just a form of practice target is not clear, the internship with little success, become a mere formality.

3.3 Internship time is short, less chance of students'.

Due to the internship site, funds, and the limitation of teachers, student's internship at each individual work time less, some type of work can be just the teacher demonstration; students have no chance to do it yourself. Internship students quantity many, the equipment is limited, so students' few opportunities. Due to the form of an internship and class is different, some students seriously enough, cause students to compare lazy, practice effect is not ideal. A variety of reasons because students didn't have the energy and design work in practice, there is no real play to the significance of practice.

4. Measures of teaching reform

Metalworking practice is a practical technology basic course, is knowledge engineering training for college students to the learning process, enhancing practice ability, improve the comprehensive quality, cultivating innovative consciousness and innovative ability of the indispensable important segment. Metalworking practice under the condition of existing have apparently can't fully play to the role of the practice teaching should be. To train the practical ability and innovative engineering and technical personnel, metalworking teaching has to be reformed.

4.1 Teaching content should be graded, so as to meet the needs of different professionals.

Metalworking practice on the basis of the overall time, change the practice teaching content, using hierarchical modular teaching. For mechanical 3 weeks internship time according to the "cognitive training, project training, comprehensive innovation training" the arrangement of the each week. 2 weeks of mechanical practice according to the "cognitive training, project training" the arrangement of the each week. The "project training" is central to the metalworking practice teaching. "Cognitive training" is a basic process in mechanical manufacturing process method, including the industrial production, mechanical knowledge chart, technical measure, etc. "Comprehensive innovation training", on the basis of the previous two training, pay attention to the guide of students creative thinking and consciousness of science and technology, the students to use comprehensive knowledge production small mechanical and electrical products (models) or installation, debugging, mainly mechanical and electrical control system.

4.2 Reform the teaching mode.

Master train an apprentice teaching mode, is to make students become simple copy the content of the teacher demonstrates, it is often easy to let students rut, lost the spirit of innovation, to some extent, restricted the students' creation, at the same time restricts the active development of students, is not conducive to cultivate talents with innovation ability, so we should reform the teaching mode of absolute protection. After the students basic mastered the various type of work, teachers should give students some space, let them according to the raw material, given to carry on the design, processing, producing a small works, stimulated the students' interest in an internship already so, exercise design talents.

4.3 To strengthen the ability training, improve the effect of practice.

Metalworking practice should be given priority to practice teaching, at the same time of attaches great importance to improve students' ability to pay attention to the cultivation of students' comprehensive ability, to give the students have the initiative in the practice, so that they can independent thinking in practice, the analysis problem, problem-solving ability has improved, can be seen in the usual teaching the students' ability of technology analysis, in addition in the aspect of students' actual operation to further strengthen basic skill training, mastering the basic requirement of the operation skills.

4.4 The combination of practice and theory.

How in very wise in a short period of time arrangement good student internship at the task is very difficult. The key lies in two aspects of teaching and learning to cooperate; one of the most main is students' initiative and self-consciousness. The first thing to let students' brains, positive thinking, in the process of internship should look more, think more, ask more, remember more. Should pay attention to in the mechanical processing: (1) what are the most common machine tools? What's the difference between its institutional characteristics? (2) What is the most basic processing method? Features include machining precision and machining range has to differ? (3) What are commonly used tools, fixtures, measuring tool? The effect how? (4) All kinds of processing methods for structural parts process requirements, such as the second student carefully operation, through the actual operation to understand deeper. Practice in metalworking practice is a basic means; the actual processing is to emphasize quantity rather than quality, to learn the process knowledge for subsequent mechanical courses laid the foundation for the principle.

5. To strengthen the construction of teaching staff

Teacher's quality directly affects the quality of the internship, to solve the problem in the metalworking practice teachers , mainly from the following two aspects : on the one hand , to change ideas , attaches great importance to the student teacher school in determination of assessment should be treated even considering the particularity of their work can be appropriately relax policy , this is not only beneficial to introduce talents, more conducive to retain talent, stable intern teachers ; The other ways to improve the overall quality of student teacher, preferential policies, the introduction of highly educated, high professional titles as a student teacher or from the related theory class teaching and research section transferring part of the practice teaching experienced teachers part-time internship guide work and might even consider from the factory some targeted mining engineering practice experience, strong expression ability of engineer or senior skilled worker to a trainee teacher, at the same time in a planned way arrange intern teacher training and study Tours, let the student teacher at the same time of constantly improve their own quality can learn more of the good methods and good experiences of others.

6. Conclusion

Metalworking practice curriculum reform is a key link in practical teaching reform, is comprehensive system engineering, involving hardware, teaching model, student training, etc., need to explore and reform unceasingly, unceasingly practices and the summary. Through to the metalworking practice teaching reform, and gradually form a complete set of engineering consciousness and the cultivation of engineering training system, and make the metalworking practice teaching in improving the students' comprehensive quality, enhance the students' engineering practice ability, cultivate and develop students' innovation consciousness and innovation spirit, etc., play an important role.

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