Teaching Thinking of CNC Lathe in Industrial Chain

Bo Tang[1,*], Jinghang Xiao[2], Mingdong Xu[3], Yuanping Zhu[4], Xinda Lv[4], Axin Wang[4], Yuhang Xian[3], Jianjie Qi[5] and AO Guo[2]

[1]Engineering Training Centre, Shenyang Aerospace University, Shenyang, China;

[2]International institute of engineers, Shenyang Aerospace University, Shenyang, China;

[3]School of mechatronics engineering, Shenyang Aerospace University, Shenyang, China;

[4]College of science, Shenyang Aerospace University, Shenyang, China;

[5]Aviation generator College, Shenyang Aerospace University, Shenyang, China.

*1092786432@qq.com

Abstract

With the importance of college students' practical ability and innovation ability, and the increasing popularity of engineering training courses in colleges and universities, CNC lathe machining has become an interdisciplinary public practical teaching course because of its course itself. It reflects the characteristics of high requirements for students' comprehensive knowledge and practical ability. If the CNC lathe course is carried out in the context of the traditional teaching mode, it may be difficult to achieve the expected level of teaching goals. This article combines the requirements for talents of CNC lathe positions in the actual production process, and the industrial chain application of CNC lathes in actual production, combined with the actual production situation, how to carry out the future higher education background of CNC lathe processing training courses. In the future multi-industry industrial chain, how to use the knowledge learned to improve the teaching efficiency and quality of practical training courses and open up teaching thinking.

Keywords

CNC Lathe; Industry Chain; Teaching Thinking.

1. Introduction

For the engineering training course education of college students, while the original engineering practice ability and innovation ability of the students are required, it should also be combined with the development trend of the industrial chain of the times, combined with the actual industrial chain production situation, and attach importance to students in the chain. The ability to apply knowledge and the ability to comprehensively analyze product production under an industrial structure.

2. The role of CNC lathes in the industrial chain

With the development and popularization of China's digitalization and informatization, China, as a major manufacturing country in the world, digitalization and informatization technology inject new vitality into China's manufacturing industry, while also injecting new vitality into different industrial chains. For the traditional manufacturing industry, digital-based numerical control technology has improved the production efficiency of the manufacturing industry, reduced the loss of materials in the production process, brought rich benefits to the manufacturing industry, and promoted the transformation of the traditional manufacturing industry to an informationized production line.

In actual production, CNC lathes mainly use programmable logic controllers to control various logical operations and sequences of machine tools, such as machine stop, workpiece clamping, tool replacement, coolant switch and other auxiliary actions. In the processing of parts, compared with traditional processing methods, the production process reflects the advantages of high processing accuracy, complex processing parts, high degree of automation, high production efficiency and high

productivity. Therefore, from the perspective of the supply and demand chain dimension of the manufacturing industry chain, the use of CNC lathes to produce processed parts has improved the production efficiency of the overall production line, reduced production costs, reduced the loss of production materials during the production process, and greatly improved the production of raw materials. The utilization rate of this has improved the interests of core enterprises in the entire supply and demand chain. From the perspective of the overall industrial chain, the application of digital machine tools has improved the production efficiency of the industry and reduced the research and development cycle of industry innovation. development of.

3. Competence requirements for college students in the CNC lathe course

3.1 Standard operation of the CNC lathe training course requires students and teachers to perform under the assessment standards required by the national vocational skills appraisal

3.1.1 Safe operation

Firmly establishes the concept of "safety first, strict discipline". The CNC lathe training course is a course that combines theory and practice, because the machine itself has a certain degree of danger, and students seldom come into contact with such production machines in their daily lives. Students are likely to be negligent and in deep danger. Before students master the basic operation of lathes, they must concentrate on safety education, use multimedia to enumerate typical cases of safety accidents, let students understand the seriousness and hazards of safety accidents, and enable students to master the corresponding safety instructions and safety operation knowledge.

3.1.2 Familiar with the basic composition of the lathe and the basic command operation of the control panel.

Students should understand the three parts of the lathe including the control system, servo system, and mechanical system, and understand their respective roles in the operation of the lathe. Students have a full understanding of the structure of the machine tool and a systematic understanding of the structure of the lathe, so as to master a certain theoretical basis for the maintenance and maintenance of the CNC lathe.

3.1.3 Programming technology.

As a machining lathe that uses a computer to realize digital program control, the CNC lathe requires students to master certain programming knowledge and programming ability, including a comprehensive grasp of G, M, T, S, F and other instruction codes, which can correctly target different For parts and components, according to the requirements of the parts drawings and their self-differentiated dimensions and coordinates, the program statements are correctly written and run successfully on the CNC lathe.

3.2 Innovation ability

For the learning of CNC lathe processing, college students should not only be satisfied with basic operating knowledge and abilities, but more importantly, have a clear processing of different parts drawings based on the understanding of the processing methods and processing characteristics of CNC lathes. Judging the way, even for special processing methods, novel three-dimensional structures can be designed and processed.

4. Teaching characteristics

In response to the above-mentioned ability requirements for students, colleges and universities should not only require students to master engineering science and theoretical analysis capabilities, but also pay attention to practical operation capabilities and design innovation capabilities when conducting numerical control lathe engineering training courses. In the teaching process, theory and practice are carried out at the same time, with work to promote learning, and competition to promote learning. And according to the students' mastery, the gradual and layered teaching is carried out for students from basic skills training, comprehensive skills training to innovative practice training.

5. Teaching thinking about the role of CNC lathes in the industry chain

In today's actual production background with a chain structure, the company requires students to be proficient in CNC lathes in accordance with the national assessment standards, but also requires students to be able to follow the actual production and the location of the company in the production chain according to different downstream links.

Product requirements, efficient production of products that meet the delivery of downstream links. This requires students to understand the connection between other processing methods and lathe processing while mastering the relevant knowledge of CNC lathes, and be able to make reasonable judgments on the processing procedures and processing methods according to the content of the drawings. Therefore, in the teaching process for lathe training courses, it should not only focus on the single processing method of lathe processing. In the process of teaching students' theoretical knowledge, the teaching of CNC lathes should be based on the background of the actual industry chain, and other teaching methods of processing knowledge should be integrated to form a "CNC lathe +" teaching mode, so that students can learn about CNC lathes. The actual production application of the industrial chain has a clear understanding and judgment. Let students learn with active and divergent thinking in the engineering of engineering training and learning, instead of mastering by traditional passive absorption. Carrying out engineering training education for college students through this learning model has a certain positive effect on students' learning ability, curriculum learning efficiency, and the cultivation of students' innovative ability.

Table 1. Example of "CNC Lathe Training Course+" (Diaital controlled lathe+)

1. software	2. laser	3. Ordinary pliers	4. CNC milling machine	5. weld

6. Conclusion

In short, in order to be able to do a good job in the CNC lathe engineering training courses for college students in colleges and universities, continue to explore and innovate the engineering training education model, combined with the current manufacturing industry chain structure, and attach importance to students' The application ability of knowledge and the comprehensive analysis ability of product production, through the combination of "industrial chain" application and teaching, form a "+" education with CNC lathe education as the core, so as to realize students' practical ability and innovation ability. Comprehensive improvement.

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