

Discussion on the curriculum reform of distributed control system in Vocational Colleges

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Abstract: through to the domestic and foreign study, training, the curriculum of distribution control system is reformed. The advanced education idea is transformed in the teaching design. The main structure of the knowledge content is transformed into the learning situation, which is based on the typical tasks and activities. The reform of the course mainly focus on four aspects, namely, curriculum design, teaching conditions, teaching methods and means, and the implementation of the curriculum characteristics, and then to discuss.

1 curriculum design ideas

1.1 course content design

The course is designed by the professional teachers and technical experts. The overall design thinking is: with the actual task requirement of enterprise instrument technician, to re-select the curriculum content; work tasks as the main line to design learning situation, to develop ability training project which is more closed to and meet the practical application; the chemical instrument maintenance workers professional qualification assessment content is organically integrated into course content. Based on the identification of vocational skills, students' professional ability is trained; knowledge standard is transformed to vocational ability standard, starting from the position and the vocational ability analysis to set up the vocational ability training objectives of curriculum.

Through enterprise research, in-depth understanding of the relevant enterprise production process, job skills requirements and current meter type, indicators and installation method, according to the needs of the industry enterprise development and the knowledge, ability, quality requirements to complete active tasks, closely integrated with the relevant assessment requirements, fully embodies the knowledge of "professional, practical and open", to determine the course content and ability training project of distributed control system.

In order to fully reflect the combination of engineering and the work process oriented curriculum ideas, take turns teaching and internship with school training room and outside enterprises, "teaching, learning and doing" are integrated teaching. In the simulation of the training, "project oriented" is as the main line, in accordance with the complete working process of "instrument technician" in the enterprise, practice training is organized. The students in the form of a group, a complete training program is implemented. Training process is in strict accordance with the standard practice of the operation and training, using the DCS training guidance documents to the enterprise, carry out data processing, analysis and identification process and results, and draw conclusions.

After the completion of the course in the school, students are organized to business and post internship. Using "task driven" teaching mode organize outside school training, it should be clear about the tasks and objectives of the school training before training, to arrange tasks to the students, so that students in the field visit and operation can seek out the answer, and find more problems. The work order should be assigned by the teacher before the practice. After arriving to the enterprise, students are taken assignment to each team, business part-time teachers are arranged to guide the students practice. The students are in different groups of rotation, the responsibilities of "instrument technician" are mainly to understand, understand production process and technical requirements, the DCS used in the field, and be familiar with enterprise working environment, the security rules, to develop students' professional quality.

The course hours of Distributed control system is 168, of which the school teaching is 112 hours, in business with the post-practice 2 weeks (56 hours), according to the actual teaching plan the appropriate adjustments can be done.

1.2 organization of teaching content

① Based on the actual working process of the instrument maintenance workers to organize and arrange the teaching content

Based on the real work task, the students' comprehensive ability is improved step by step and orderly, according to the cognitive law to integrate teaching material.

② School enterprise cooperation, joint design and arrangement of teaching process

Combination of working and learning, school training room and outside corporate alternate between teaching and with post internship, the advantages of advanced automated production equipment and technology resources in petrochemical companies are relied on, "to hire each other" system between business technical personnel and professional teachers is built, to make "teaching, learning, doing" integrated teaching, in order to make full use of opportunities for enterprise overhaul and arrangements for students with post internship. Teaching arrangement gives consideration to both production and overhaul. Based on "learning with industry and trade, working and Learning Alternation" mode, school curriculum content organization and arrangement are implemented, deeply integrated with enterprise production.

③ This course is made up of 2 teaching situations, each containing several practical projects.

"Question teaching" is used in instrument principle knowledge structure explain, making illustrated, vivid animation effect of multimedia courseware, increase the amount of information of classroom teaching, to improve the efficiency of classroom teaching. The new instrument is brought into the classroom, showing with teaching. In each training project, the main is to complete by students themselves, teachers need to guide and review. Students in the form of a group implement a complete training program. In the training room of the simulation, "project oriented" is as the main line, in accordance with the full working process organization and practice training of instrument maintenance work in the enterprise's. The training process is strictly according to the standard operation training, the DCS training program list, the implementation list, the calibration report and training program guided file are used in data processing, analysis and identification process and results, to get the identification conclusions.

④ Using "task driven" teaching mode to organize extracurricular training

As instrument maintenance technician, it should understand the production process requirements and equipment. The course is according to the time of the company's major overhaul to organize the students to the enterprise instrument maintenance team with post internship. Practice using the task driven teaching mode, before the arrangement of external training, the task and purpose are needed to clear, to arrange tasks to the students, so that students in the field practice and operation can seek out the answer, and found more problems.

The work order is assigned by the teacher before the practice. After arriving the enterprise the students are assigned to the brake team, and to arrange business part-time teachers to guide students to practice. Students mainly understand the instrument repair work responsibilities, the production process and technical requirements, the use of the instrument in the field, and are familiar with the work environment, the solution of safety regulations, training students' Professional quality, to complete the internship report.

2 teaching condition

2.1 Teaching material construction and selection

According to the already established "curriculum standards" and the determined "curriculum content" after investigation, combined with the automation of the equipment of the center, according to the teaching process and teaching effect, on the basis of the existing curriculum reform, "distributed control system" is compiled, combining with the project oriented teaching material. The contents of the textbook should reflect the needs of the post of course, and to work as the carrier and

the industry standard as the basis, in accordance with the pressure, liquid level, flow, temperature, composition of the five parameters of the measurement program to prepare school based materials. The corresponding work flow of the course is completed as the basis, to form the characteristic school-based teaching materials of the teaching process, and make continuous trial and modification in the teaching.

2.2 network teaching resource construction

On the basis of the campus network, the curriculum learning website is established, students can find the required process, such as instrument detection pictures, use of the relevant materials, and course learning materials (including all the relevant courses of PowerPoint, online learning flash courseware, animation, video, teaching materials, instrument specifications, curriculum exercises, etc.) in the website, with online Q & A, difficult discussions, exchange of teachers and students, etc., the electronic teaching plan, learning guidance, electronic teaching materials, exercises set and other content are published online, it is easy to learn.

3 teaching methods and means

In order to cultivate the high skilled talents in the production line, and according to the teaching content and characteristics of this course, the teaching process is based on the integration of classroom and practical training base, after the practice, the teaching effect is obviously improved. In the process of training, the teaching mode of task driving is used to improve the students' enthusiasm. The teachers of subject group according to the posts ability design teaching content, the students are as the main body, to cultivate the vocational ability as the center, to actively reform, explore, and accumulate a variety of teaching methods to meet the characteristics of higher vocational education, to significantly improve the teaching effect.

3.1 task driven method

Using the task driven teaching method, combining the teaching, learning and doing, set the instrument maintenance skills identification center as the carrier as one based on the school district, the discussion area and the training area. First of all, learning tasks in the project demonstration, through the situation to increase the students' perceptual knowledge, and then explain the corresponding knowledge content, classroom teaching is around the learning task, and then the corresponding work tasks are set up, so that students take the task to learn the relevant knowledge, to judge the problem by their own ability to get the problem-solving methods. Finally, let the students do their own work to complete the project in the learning task, and then by the teacher's comments and guidance. This method is conducive to mobilize the enthusiasm of students, is conducive to the cultivation of students' ability to solve problems independently, innovation and self-learning ability.

3.2 case teaching method

In the course of teaching, the teacher provides the information of the real case of the enterprise, and puts forward the problem. The students take the form of the group to discuss the case. Taking students as the main body of learning, teachers should guide and inspire students to explore interest, encourage and cultivate students' creative thinking, improve students' ability to analyze and solve problems.

3.3 guided-text method

To open teaching resources, and make full use of CAI courseware, teaching aids, teaching facilities and so on. Such as, taking the student as the main body and teachers to be appropriate guidance, induce students to look up the information independently according to guided-text, then make group discussions and exchange to analyze problems, to solve the problem and improve the students' comprehensive professional ability.

4 curriculum implementation features

4.1 school teaching process

This course is made up of 2 teaching situations, each containing has several practical projects.

In the course of teaching, each teaching project should be according to a certain procedure to arrange the teaching process and contents: that is, teacher proposes process requirements and project tasks-- students make group discussion and report--peer assessment by students-- teacher guidance-- students discuss and report to other students-- teacher commenting, teacher sets an example-- students practice--analysis and summary, students practice--peer assessment by students-- achievement exhibition--teacher commenting--knowledge-transference—summarizing-- evaluation of one's performance. According to this integration, it is ordered for the six processes of information, decision-making, planning, implementation, inspection, evaluation, through this "teaching, learning, doing" integrated project teaching method, so that students can fully participate in the whole teaching process, to develop students' enthusiasm, initiative, and stimulate students' learning and innovative awareness, so that students quickly mastered the knowledge and technology, for future work, suitable for professional change and sustainable development to lay a certain foundation.

4.2 teaching process out of school

The advantages of advanced automated production equipment and technology resources in petrochemical companies are relied on, "to hire each other" system between business technical personnel and professional teachers is built, to make "teaching, learning, doing" integrated teaching, in order to make full use of opportunities for enterprise overhaul and arrangements for students with post internship. Teaching arrangement gives consideration to both production and overhaul. Based on "learning with industry and trade, working and Learning Alternation" mode, school curriculum content organization and arrangement are implemented, deeply integrated with enterprise production, to ensure that students in the fourth semester at least 2 weeks in the petrochemical company learning DCS. Practice using the task driven teaching mode, to clear the task, purpose, and to arrange tasks to the students before the arrangement of external training, so that students in the field practice and operation can seek about the answer, and find more problems.

The work assignment is issued by the teacher before the practice. When arriving at the enterprise, students will be assigned to the brake team, and business part-time teachers are arranged to guide students to practice. Students mainly understand about DCS instrument maintenance work responsibilities, DCS' related production process and technical requirements, the use of DCS in the field, and are familiar with the work environment, to understand the safety regulations, training students' professional quality, to complete the internship report.

4.3 teaching effect

It is alternated between working and learning, including on-the-spot teaching in enterprise, ethyl acetate workshop in school and stripper DCS operation room. According to the requirements of the course teaching, students are arranged to the training base of observation and investigation, and enterprises' technical personnel are at the scene teaching. And through college production workshop, to make students contact with real job, familiar with the basic requirements of the post ability, to stimulate the students' desire for knowledge and learning interest.

4.4 resource library construction

To create a resource pool, open multiple resources, and make full-service students, which includes the classroom teaching, virtual classroom, network classroom, expanded classroom, business class, innovative classroom, and learning classroom. The automation technology multielement learning and training resources in production process are gathered. To open up, three-dimensional learning space is created, to provide students with a full range of services.

Reference

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