The Application of Project-Based Teaching Mode in Curriculum Teaching of Computer Application Foundation in Higher Vocational Colleges

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Abstract—At present, the common fault of curriculum teaching in higher vocational colleges is the lack of practice or emphasis on the theory. However, the core content of new curriculum reform in higher vocational colleges is to convey practical and compound talents to the enterprise production line. As an important course in higher vocational colleges to cultivate students' computer application skills, computer application foundation has its clear requirements for teaching outline: in the course teaching, teachers should strengthen the cultivation of students' comprehensive ability, actively adopt "work-integrated learning" mode of teaching and improve students' manipulative ability and competence to solve practical problems in professional jobs. In this paper, the current situation of curriculum teaching of computer application foundation in higher vocational colleges is analyzed and the theoretical basis of project teaching is expounded at the same time, on this basis, the application of project teaching mode curriculum teaching of computer application foundation in higher vocational colleges is then discussed, and the implementation of the project teaching method and its effect are finally analyzed.

Keywords—Project teaching mode, curriculum teaching of computer application foundation, higher vocational colleges, pplication research

In today's world, as science and technology is developing rapidly, the application of computer is also becoming more and more popular in the field of network, information management and multi-functionalization. Teaching mode in higher vocational colleges is different from that in the ordinary colleges, because it is geared to the needs of market and the employment of graduates, aims to cultivate the students' vocational ability and encourages students to get involved into practice, so as to cultivate students' autonomous learning ability, innovation ability and the relatively independent ability to analyze and solve problems. Only in this way is it able to make the students develop towards the direction of specialization and information management system.

The talents training goal and the technical nature of higher vocational colleges are determined by the occupational management of colleges. What we call vocational education should be provided with both "practical" and "technical" teaching. In view of this, the target positioning of vocational education must be based on the basic theory and professional knowledge adapted to China's socialism modernization and construction. In addition to this, the professional ability and quality in actual work should also be emphasized on. Thus, talents here can be defined as those who adapt themselves and are competent to the production, construction, management and service industries with higher technology[1]. According to the purpose of application and the spirit of required and sufficient education by ministry of vocational education, higher vocational colleges are supposed to meet the need and aim of training applied talents accordingly.

I. THE CURRENT SITUATION OF CURRICULUM TEACHING OF COMPUTER APPLICATION FOUNDATION IN HIGHER VOCATIONAL TEACHING

Due to the constant enrollment expansion of colleges and the increasingly fierce market competition in recent years, Chinese enterprises begin to develop a multi-level demand for talents. As a consequence, college students' employment situation goes towards a worsening trend. According to related statistics, since 1998, only one province in northeast China has set up more than 40 computer professional organizations in nearly 50 colleges. There are tens of thousands of computer professional students at school, thus college students' employment pressure can be obviously seen. On the other hand, the social demand for computer talents is far from being met[2].

The reason is that many students' overall qualities and skills in the vocational colleges can't meet the requirements of social enterprises, especially the structural contradictions in students' lack of practical ability and experience. Social demand is disconnected with the training objectives of vocational colleges, embodied in the following aspects.

A. Students' computer level is uneven

The condition of higher vocational students is limited due to relatively weaker basis and greater difference compared with normal college students .Some students have frequently practiced using computer when they are still high school students, but some others never use computers in their daily life. The previous teaching mode will not be able to juggle all the specific conditions of the students and can only focus on the lower principle to concern the latter students, which as a matter of course makes the former students waste their time and energy to repeat the knowledge having mastered.

B. The teaching idea is obsolete, which fails to motivate students' interest and initiative in study

At present, the teaching pattern most used in the class is that teachers use multimedia courseware to explain the content of the books broadly. In computer class, students do the assignments under the help of teacher, which cannot exert the principal role of students and afford to mobilize the enthusiasm of students' learning.

C. The teaching contents lag behind

At present, the development speed of computer application technology is very fast, however, and the teaching content of the course "computer application foundation" is updated slowly. Students often only practice to master certain knowledge but phase out of the actual application, leading to their incompetence in practice.

D. Teachers and students' lack of awareness of the course

Some teachers lack of insufficient understanding to improve the students' information literacy and cultivate the students' ability to apply knowledge; Students in the process of learning are also unconscious of feeling information culture, strengthening information sensitivity and mastering relevant skills and ability to apply knowledge. School curriculum only gives priority to exam-oriented knowledge and most of the courses follow the paper-based testing and appraisal mode even if some of courses have requirements for computer test of practical operation[3]. Through the traditional teaching mode, students, despite the higher grades, can't meet the needs of the social enterprises.

Above all, schools should take training students' into consideration to meet the market demand. Students are faced with great pressure in employment at graduation. On the one hand, enterprises need a lot of practical talents with high quality and complex skills; On the other hand, many students fail to afford the requirements in the work. Therefore, only to solve this contradiction can alleviate the employment pressure, which should be treated as the priority of computer teaching in vocational colleges[4].

II. AN RATIONALE OVERVIEW OF PROJECT TEACHING

Theory is the basis and direction of navigation of all researches, on which theoretical research on a deeper knowledge of science can be carried out. In terms of project teaching, researchers at home and abroad have mentioned a lot of theories and pointed out many practical teaching methods. The ultimate purpose of project teaching is to let students take the initiative to pursue the project's practice process and raise students' interest in the proposed project, so as to achieve the goal of teaching. Therefore, the project teaching focuses particularly on students' initiative and enthusiasm. So, in order to achieve the goal of project teaching, we should try to create an environment of inspire students initiative and interest and build up a good psychological preparation. Concerning project to create a good teaching environment, the domestic and foreign scholars have proposed many theories. Among them, constructivism learning theory is the most outstanding one.

Constructivism learning theory is one of the important branch schools in the western cognitive learning theory. Contemporary constructivists argue that due to the different experience of each person, everyone has his own interpretation and understanding of the objective existence of the world. Learning process, therefore, doesn't refer to a simple process where teachers convey their learned knowledge to students, but the process of constructing knowledge by the students themselves, in particular, students are not passively receiving teaching knowledge, but actively construct the meaning of knowledge. At present, the domestic computer education mode in higher vocational schools is under the great influence of traditional education mode. For a long time, teachers' lectures play a dominant role in class, which is a non-interactive mode of education for students and greatly hinders students' interest and enthusiasm in computer basic courses, especially bad for students to master the basic knowledge of computer.

Constructivist learning theory claims that everyone has a different understanding and interpretation of information from outside, therefore, the understanding to the content conveyed in teachers' lectures is totally different. In the course of computer application foundation, it not only depends on teachers' guidance of students how to get involved in the course, but also requires students to pay attention to the content conveyed by teachers. As is advocated in constructivism learning theory, project-oriented teaching mode should be applied to course teaching of computer application foundation to cultivate students' professional skills[5].

Student centered on project can study with a clear mission in learning process, have a good mastery of project knowledge and discover learning resources, so that students' the learning initiative and enthusiasm can be stimulated to a maximum extent. Students find and solve problems encountering in the learning process to achieve mastery of knowledge. This mode of learning not only greatly improves the students' enthusiasm and initiative, but also improves students' ability to conduct practical experiments and solve the actual problems.

Application and practice of project teaching mode in computer application foundation course in higher vocational colleges

The textbook computer application foundation used in the computer education of higher vocational college mainly takes higher vocational college students' information quality education as the breakthrough point to meet the goals of social and economic development demand. This computer course is rich in content and clear in structure, which is of strong practicability. Its main content includes the application and operation method of Word, Excel and PowerPoint, the most widely used software programs in modern office work. In the computer course for students in higher vocational colleges, these three main contents are very suitable for the project teaching mode of education.

A. Teaching design of project teaching mode

Higher vocational college is different from ordinary colleges and universities, which exists to achieve its major function to cultivate the talents in a great need in the social enterprises on the basis of training professional skills and

taking providing professional personnel as the goal. As a result, its teaching methods and teaching content must change with the demand of the social and cultural environment's reform and adjustment. The content of the course computer application foundation is divided into five modules: basic computer knowledge, Word2003, Excel2003, PowerPoint2003 and network knowledge. Specific content is listed in table 1.

TABLE I. CONTENT OF COURSE

Modules	Content
Basic computer knowledge	Basic computer knowledge; the formation and development of the computer; the characteristics and classification of the computer; system composition; summary of the operating system; the basic operation of Windows; the function of the control panel operation, etc.
Word2003	Word2003 overview; the basic operation of Word2003; form production; mixed typesetting of pictures and words, etc.
Excel2003	Excel 2003 overview; the basic operation of Excel2003;the use of formula and function;Excel2003 list of data and graphs, etc.
PowerPoint2003	PowerPoint2003 basis; the page content editing of slide; decoration of slides page appearance; power-point animation effects and action; broadcast and print presentation, etc.
Network knowledge	The network foundation and security; basic knowledge of the Internet; query of information resources; email service function, etc.

According to the above course teaching content, the introduction of project teaching method and the fundamental way of introducing project teaching model are based on the content of the teaching programs with real object as the material, which not only includes the basic knowledge of teaching, but also arouses the enthusiasm of students to solve the problem and make teachers and students participate in the project together. According to the learning characteristics of students and the nature of the course computer application foundation, teaching design case of specific project is given as follows:

B. Analysis of data and share of resources

TABLE II. COMPANY WORKER PERFORMANCE STATISTICS

Project indicators	Project content		
	Knowledge objectives	Skill objectives	Attitude objectives
Teaching objectives	1, understand the concepts and mutual relationship between work table and table cell; 2, understand the window of Excel; 3, master how to build, open, save and close work table; 4,master Excel worksheets computing functions, such as automatic sum; 5,master the methods of creating graphs	1, Know how to make form and format form; 2, use commonly used mathematical statistics and calculation formula function; 3, Know how to make chart, such as bar charts and line charts.	1, train students to own the good cultural accomplishment; 2, train students' good interpersonal communication skills to respect teachers and teamwork spirit to unite classmates
Teaching key points	1, establish and set table; 2, commonly used formula statistics; 3, charts establishment		
Teaching difficulties	The reference of cell, including absolute reference, relative references and hybrid reference		

C. The teaching implementation process

According to the characteristics of higher vocational college students to learn computer course and the actual situation of students, the introduction of specific teaching implementation process in project teaching can be divided into the preparation stage, implementation stage and evaluation stage, specifically including the following six steps:

1) Determine the project and group division of labor

This is the beginning of the project teaching. Through teachers' questions, guidance and introduction to project, students shall be borne by their different group tasks due to diversified personality and characteristics. Group tasks can be freely chosen by students and teachers see to assignment of the division of labor. Team members play various roles or multiple roles, which can be constantly changing in the process of completing group tasks[6].

2) Choose a topic and make a plan

Each group can choose a topic from all the project tasks. Due to the difference between groups, they will choose topics differently. The project is jointly worked out by teachers and students and then formulated by students only.

3) Autonomous collaboration and collecting data

This is a process in which students see to information collection in accordance with the process of problem solving, which can cultivate students' skill of collecting data.

4) Analysis of data and share of resources

This process requires students to get involved in the data processing, in which they need to use all kinds of old and new knowledge and skills to construct knowledge, manage information effectively and share with other groups[7].

5) Activities exploration

This process is an important stage of project teaching and is the embodiment of project teaching's difference from traditional teaching. At this stage, students form their own work according to the data collection.

6) Results communication, summarization and evaluation

With Works produced, each group is supposed to report the results of activities, exchange experience and understanding of the process of learning and share the success and joy of the work.

7) Effect analysis of project-based teaching mode

The research object of project-Based Learning (PBL) is the concepts and principles of certain or multiple subjects and the research purpose of PBL is the application of the computer teaching. PBL aims to work out coping strategies to solve a series of problems in computer learning through constant exploration with the aid of all sorts of materials and information in a period[8].

Courses higher vocational education covers inherit and carry forward the basic ideology of vocational education to reflect the needs of social and economic development and students' needs in learning. Project teaching embodies the development value of vocational education, which has a direct impact on the teaching quality and students' physical and mental development.

Higher vocational schools cultivate talents who are engaged in the work "using the objective law in social service". What they need is the effective practice of technical knowledge, therefore, higher vocational colleges should learn to help learners establish a direct relationship between study and work by providing learners with knowledge and skills related to production process, with which they are able to form a good professional quality and working habit.

As a matter of course, the implementation of project-based teaching in higher vocational colleges can enable students to complete tasks in actual work and then learn the really useful technical knowledge. In this process, students are cultivated to gradually form their own ability to make a judgement of the problems in actual work and work out coping strategies accordingly, so their wisdom in the practice of vocational circumstances is promoted and their competence to the actual work is achieved as well. In this way, the value and significance of education is accomplished.

III. CONCLUSION

Project teaching method in daily teaching can make students full of interest to challenge each of the projects to accumulate knowledge and improve ability to solve real problems. Most of students through project teaching and learning have formed the right understanding of computer. The work-integrated learning mode is not only able to cultivate students' teamwork ability, build their self-confidence and give them a sense of accomplishment, but also practice professional qualities in innovation and problem solving, achieve the goal of knowledge and promote the sustainable development of the students.

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