

Construction, Implementation and Evaluation of a Smart Classroom Based on Teaching Resource Database for Vocational Schools

Mingjiao Xu

The Bay Academy, Shenzhen, Guangdong, 518067 China

Abstract: Vocational education resource pool is designed to integrate “Internet +” technology into vocational education, so that it can promote the reform of educational philosophy, educational methodology and educational mechanism of vocational colleges. The most important battlefield of this reform is the classrooms, where we can start the construction of smart classrooms with the goal of improving learners’ core competence by changing thinking perspectives, building technology platforms, ensuring implementation of new mechanism, etc. To do so, it is necessary to construct and facilitate intelligent classrooms based on resource database. which enables educators to gain accurate data and comprehensive teaching resource. This paper focuses on the research and analysis of the ideas and methods of building and developing smart classroom based on resource database and establishes the evaluation system.

Keywords: Vocational education; Resource library; Smart classroom; Construction; Implementation; Evaluation

Introduction:

the national professional teaching resource bank is an important project to deepen the comprehensive reform of vocational education. Based on majors, professional groups and job position groups, through the concept of group effort and sharing, the teaching resources provided for vocational education are abundant and high-quality. The resources of building the resource base should be closely linked to the requirements of vocational education in information age and rely on the means of informationization. It not only provides pieces of information, but also reflects systematic open courses online, providing innovative opportunities for the establishment of the “Internet plus education” environment, and integrating occupational information technology into instruction. This provides important support for the instructional reform for vocational education.

1. Steps and methods of constructing and implementing smart classrooms based on resource database

(1) Standard design. The basis of vocational education serving industrial development is to take the core competence of talents needed by enterprises as the training goal. A special team shall be set up in the resource library to accurately understand the actual needs of the industries, transform the needs into projects and tasks through data analysis, and design courses systematically. The relevant standards could be established from the macro, meso and micro levels.

At the macro level, the first step is to construct a logical framework. On this basis, the professional course design team, based on its specific industry field, constructs professional skill system, organizes and sorts out tasks and projects, comprehensive problem bank, so as to form professional teaching standards using information and resources gained from research and communication with the local industries and information that are already in the database.

From the meso level, we rely on the professional curriculum standards. The learning goal, detailed teaching contents and instructional methods, should align with learning objectives of the curriculum. In addition, the project system and task system of the course should be studied, analyzed, and confirmed by the teaching team, then the course could finally be presented in a modular way. Each project or task should have a corresponding module to organize teaching resources and materials according to the structure of the “before class, in the class and post class phases” of the classroom. The logical relationship between each module should not be too loose or too tight. The purpose is to enable subject teachers of various schools to independently select modules and apply courses. At the micro level, teacher should be able to deconstruct the objectives, design the class activities based on the curriculum standards, prepare teaching tools and materials, implement teaching strategies, and create a positive learning atmosphere.

(2) Change of perspectives. In this whole process, the point of view of teachers is particularly important. Therefore, to enhance instructional training, teachers should firstly study and understand the idea of smart education, so that It is possible to transform the traditional learning of knowledge into the cultivation of core competence as the most important goal.

To redesign and optimize the teaching effectiveness, We should clarify the function of teachers and improve their instructional skill and ability to apply resources^[1].

(3) Resource preparation. The construction of high-quality teaching resources is an important task of the resource database project

team. The resource materials and tools jointly constructed by all resources from the government to the industry, from enterprises to schools can fully help students solve their difficulties in learning new knowledge, which should not only meet students' basic learning needs, but also satisfy their personal level of difficulty ; The curriculum can be constructed across levels and regions; Students' learning enthusiasm and creativity can be stimulated by virtual reality learning tools to better cultivate students' core competence.

(4) Teaching strategies. Promoting students' learning ability such as "application, analysis, evaluation and creation" is the highest principle for designing smart classroom teaching strategies. Therefore, teachers should do their best to cultivate the following activities: analyzing, comparing, summarizing, problem solving, investigating, experimenting, creating and other learning skills, and fully motivate students' original thinking in the teaching process, so as to improve students' creative thinking and problem-solving ability^[2]. For example, taking the refrigeration automation major of a vocational college as an example, the department took the above contents as the guiding principle, the teaching resource project team organized an instructional method to promote learning by focusing on the combination of online and offline courses, and teaching in sections according to the three stages: before, during and after the classroom. Before class, to analyze the background, keeping the task accomplishment in mind, teachers organized and led students to make independent evaluation about their background situation and prepare for learning. The focus of the classroom was the interaction between teachers and students. This interaction was a combination of online and face-to-face, so that students could complete learning and projects in a way that suits their needs and schedule. Personalized counseling was the focus after class. Students' learning got teachers' evaluation and feedback, and students were directed to resources assisting their further learning, research, and establishment of their own values. Learning motivation, innovation and personality were gradually built up during the learning process.

(5) Technical support. The technical guarantee for the implementation of smart classroom lies in the micro knowledge database platform applied in the teaching resource database: the platform can classify and store resources, intelligently retrieve and promote resources. Based on cloud platform and intelligent big data, it facilitates cooperation, communication, and learner-to-learner interaction in the most convenient way. Therefore, by recording and analyzing big data, it is easier for teachers to conduct targeted intervention and accurate teaching for individual students. Electronic student files can be used as the basis to evaluate students' knowledge and learning effectiveness. Moreover, this enables comprehensive evaluation in combination of self, teacher, and peer evaluation.

2. Intelligent classroom implementation evaluation system based on Teaching Resource Database

Building and promoting smart classroom is not something that can be completed in a short time. A complete set of evaluation system is needed to promote its continuous improvement. The components of a smart classroom include learners, facilitators, resources, equipment, tools and learning activities. Therefore, the smart classroom evaluation system based on teaching resource database covers two aspects: learners and facilitators, four evaluation objects: resources, equipment, tools and learning activities, as well as three stages of a class: before, in the class and post class^[3]. The core of developing smart classroom is to take learners as the center and cultivate their core competence. It is also very important for learners themselves to evaluate smart classroom.

3. Conclusion

To build the teaching resource database for vocational education, we can use the construction and development of intelligent classroom to implement the perspective of "learner centered under teacher guidance, enabled by resource bank system". Moreover, the project construction of the resource bank also ensures the further promotions of the development of smart courses. Therefore, the relationship between teaching resource database and intelligent classroom is a kind of "symbiosis". This paper studies the general construction and application of teaching resource database, analyzes the ideas and methods of building and developing smart classroom based on the database, so as to promote the development of smart education and improve learners' core competence.

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