Research on the Construction of Stereoscopic Teaching Material System

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Abstract. Teaching materials are the carriers of teaching contents and teaching methods, as well as the important tools for imparting knowledge and training skills. Their advantages and disadvantages are directly related to the quality of talents training, the stability of teaching order and the improvement of teaching quality. Therefore, the construction of teaching materials has always been one of the key contents and core parts in the educational reform of colleges and universities.

Introduction

Three-dimensional teaching materials reflect modern educational concepts and uses of modern network technology platform, based on traditional paper textbooks with professional courses as the center, and include multi-media, multi-modal, multi-purpose, multi-level teaching resources and various teaching services. The collection of teaching publications for the structural support of the content forms a teaching environment that enables teachers and students to teach and learn independently. It includes both traditional 2-D paper textbooks and multimedia digital teaching resources produced by modern information technology. In terms of content, it includes the main textbooks, supplementary textbooks, study guides, test questions, etc.; in terms of performance, there are papery media textbooks, audio-visual products, electronics, online publications, online courses, MOOC courses, and so on.

Construction Status

The development of three-dimensional teaching materials lack pertinence and practicality. The overall performance is as follows:

1. The three-dimensional teaching product lacks systematic teaching design ideas. Although some three-dimensional textbook products have a variety of external expressions, their inherent nature does not fully reflect the idea of providing three-dimensional service for teaching.
2. The compilation of three-dimensional teaching materials has the phenomenon that the content’s complementarity is not strong and is not synchronized. At present, some three-dimensional textbooks have different media forms of textbooks produced by different teams or individuals, resulting in unsynchronized content, uncoordinated styles, and no complementary advantages.

Relationship between Relevant Theories and Construction of Teaching Materials

The main theoretical foundations related to the design and development of teaching materials include systematic scientific methods, learning theories, teaching theories, and educational communication theories.

(1) Systematic science theory and construction of teaching materials
Systematic science theory is designed to study the objects from the perspective of the whole system, inspect from the interaction between the system and the elements, between the elements and the elements, and between the system and the external environment in order to achieve the best
scientific method of processing problems. Systematic science theory focuses on the holistic analysis of the system and discovers the regularity of the system from the relationship and interaction among the various elements of the system, that is, the method of examining the object in the form of the system according to the systemic nature of the thing itself. System science theory is the methodology foundation of this research, and also the basis for the relevant analysis of three-dimensional teaching materials construction. The research on three-dimensional teaching materials construction involves manual writing team, content design, textbook management, textbook promotion, technical support, course evaluation standards and other related aspects. Therefore, it is necessary to apply systematic science, systematic thinking, systematic theory, systematic engineering and systematic analysis under the guidance of systematic science theory to propose corresponding countermeasures for the construction of three-dimensional teaching materials.

(2) Constructivist learning theory and construction of teaching materials

Learning theory is one of the theoretical foundations of construction of teaching materials. The latest learning theory holds that learning is the process of interaction between the learning subject and the objective world. The construction of three-dimensional textbooks is based on the constructivist view of learning which was popular at the end of the 20th century. Its emphasis is placed on the learner-the subject of information processing and the active constructor of knowledge, it is no longer a passive recipient of external stimulation and an instilling object of knowledge. Teacher becomes the helper and facilitator of the learner's learning. The constructivist theory emphasizes the context of learning, using the original experience to assimilate and adapt to new knowledge that is currently acquired, and then form the construction of knowledge. In general, current cadre education is short-term training with clear job orientation, pertinence, and a certain academic educational foundation. The process of round training requires to utilize knowledge directly to specific positions, reflecting the ability standard, which also determines that the occupational education has strong practicality and dynamics, and the content of course should be in dynamic development. Meanwhile, actual training requires that the scientific and cultural quality of training object is always in the process of being generated. Overall, these put forward higher requirements for the construction of teaching materials for occupational education. Therefore, the learning mode and the law of thinking of current cadres are part of the basic principles for the design of three-dimensional teaching materials for current cadres.

(3) Teaching theory and construction of teaching materials

Teaching theory is one of the theoretical foundations of textbook design. The basic viewpoint of textbook edit in constructivist teaching theory is that the goal of teaching materials is based on the construction of meaning with the development of competence as the core; the choice of teaching materials is changed from knowledge center to learners and their objective environment; the organization of contents of textbook emphasizes the contextual and social nature of knowledge transition. The implementation of textbooks respects the subjectivity of students completely.

With the development of various new teaching theories, teaching has changed from traditional one-way teaching to multi-directional communication. It is considered that teaching is a process of social interaction through cooperation between teachers and students, and it is also a continuous generation of the transfer of knowledge and development capabilities. The development of teaching theory pays more attention to the reform of research curriculum and teaching materials, such as the typical representative case teaching method, task-driven method, simulated practice teaching method and research teaching method, etc. No matter what is the teaching method, it is necessary to construct corresponding teaching materials according to the training objectives of the trainees, change the teaching methods of the previous teaching materials, and truly save the teachers from the imprisonment of teaching materials. As a kind of adult job training, current cadre trainees need to initiative explore various knowledge closely related to the actual job requirements under the guidance of teachers, and gradually build their own knowledge system. Therefore, they cannot be subject to a single teaching material. It is required to construct the three-dimensional teaching materials according to their actual professional situation to improve thinking divergence and ability.
(4) Education communication theory and construction of teaching materials

Educational communication theory is the educational technology principle to be observed in three-dimensional teaching materials design. The educational communication theory believes that the composition of the educational communication system has six elements, namely, educators, educational information, educational media, educators, educational effects and educational environment. In the information learning environment, due to the network of educational media, all available visual, audio and tactile media can be used as educational media for learners, can design the system of presentation, transmission and feedback of teaching information scientifically and systematically. In addition, the construction of three-dimensional teaching materials must apply advanced digital resource construction techniques, tools and measures based on computers, networks and development platforms, build a digital resource support platform to obtain the best teaching conditions and create the best teaching conditions. The independent learning of the trainees in the current cadre training requires three-dimensional teaching materials to provide good educational information and educational environment in order to achieve the best educational results.

Construction Content of the Three-Dimensional Teaching Material System

The three-dimensional teaching material is a basic task of professional construction. Therefore, it is necessary to improve the construction of three-dimensional teaching materials at the height of subject profession, integrate and reconstruct various teaching resources, and strive to create a "textbook—audio-visual materials—online courses—online learning platform "four-in-one three-dimensional teaching material system. 

(1) Construction of a batch of superior teaching materials

Firstly, a series of high-quality should be compiled for professional backbone courses. Then, we need to research, construct, and use. The construction of teaching materials and textbooks are organized in a planned, phased, and high-standard manner to achieve scientific, advanced, practical, and characteristic construction goals.

(2) Construction of a set of high-quality digital teaching resources

We should develop a set of high-quality digital teaching resources to facilitate the dynamic update of teaching content on the basis of teaching materials. The digital resources mainly include electronic lesson plans, multimedia courseware, online courses, MOOC courses, questions database, online test system, etc. To be more specific, we should combine comprehensive information technology with advanced educational concepts, produce corresponding online courses for relevant courses according to the network course construction standards, and update multimedia courseware in time according to the new course content system. Then, the construction of online courses can be implemented simultaneously. Besides, we can develop a set of online test system integrating test bank management and online assessment, and promote the application.

(3) Construction of an open network teaching platform

It is important to create a network teaching platform based on the campus network and the research section of subject website, including the individual teaching website of the instructor (integrated resources for the teacher's teaching style, multimedia courseware, electronic lesson plans, teaching materials, etc.), online courses, course websites, etc. In addition, the “online personal space” was opened for each student on the web server of the teaching and research room. All the operational documents during course were stored in it, ensuring the continuity of operation and facilitating the implementation of course design. Through the construction of a network teaching platform, the extension of the classroom to the extracurricular and classroom to the network is realized.

Measures for the Construction of Three-Dimensional Teaching Material System

(1) Follow the top-level design theory and carry out the overall construction concept according to the professional objectives.
In the first place, we should use the top-level design theory, starting from the professional construction goal to the overall goal of the whole profession, to coordinate all aspects, levels and elements of the teaching material construction. The content and presentation methods should be advanced and have hierarchical difference to various objects. In the second place, according to modern educational concepts and information technology, we should integrate multi-carrier, multi-modal, multi-purpose, multi-level teaching resources, build a multi-functional, multi-style teaching package from the integration of teaching design, form a series of teaching solutions, as well as combine the teaching package with the course website to create a teaching environment where the teaching staff is convenient to teach and the students can learn independently, effectively extending the space and time of the “classroom”.

(2) Formulate the construction plan of three-dimensional teaching materials and quality standards based on the job requirements.

There are many problems involved in the construction of three-dimensional teaching materials such as application environment issues, management issues, technical issues, etc., which require relevant standards and rules for constraint and management. To sum up, serialized construction, standardized management, and practical development can form a multi-level and multi-functional teaching resource service system.

(3) Utilize the theory of action orientation and propose a reverse construction strategy for the three-dimensional teaching material system.

The reverse construction strategy of the teaching material system refers to the direction of the demand of troops; it applies reverse deduction and analysis of the ‘formation of the positional ability’ to complete reasonable allocation of curriculum modules and construction of teaching material system. Specifically, the construction of teaching material system adopts a systematic approach: the construction of teaching material system is carried out in accordance with the idea of “occupational requirements—curriculum system—teaching material system—three-dimensional teaching materials”.

(4) Adhere to the drive of innovation and grasp the design and development of three-dimensional teaching material system.

First, when it comes to the content design, it is necessary to establish a series of teaching resources that meet the rules and cover the whole subject. The teaching resources can be transferred into products timely to meet the requirements of professional teaching as well as requirements of actual training, to make sure that students can manipulate what they have learned. Second, in terms of methods, it is necessary to ensure the openness, practicability and advancement of teaching resources, integrate software and hardware resources, and adopt cooperative cooperation to build teaching resources, which plays an important role in promoting the connotation of the entire subject. Additionally, about application, it is vital to reflect the diversity, openness, and shareable property of applications of teaching resource construction, replicability as well.

Conclusion

The construction of standardized, scientific and practical three-dimensional teaching materials is a basic task of professional construction. On the one hand, the construction of three-dimensional teaching materials expands the form and structure of teaching resources. On the other hand, it expands time and space structure and activities of curriculum teaching. In summary, the application of three-dimensional teaching materials will change the traditional teaching mode, realize the diversification, informatization, networking and actual combat of teaching content, meet the teaching requirements for different levels, and promote the reform of teaching mode to a large extent.

References
