

Research on Digital Course Construction Based on Curriculum Standard

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Abstract—The digital course construction in university campus has different characteristics. Some “pay attention to video and attach less importance to research”, the other “pay attention to instruction and attach less importance to design”. They neglect an important basis at the same time: curriculum standard. Curriculum standard is the foundation and basis to manage and evaluate courses. The goals and content of digital course construction shall conform to curriculum standard, in order to correctly determine teaching objectives and solve problems faced by students in the process of learning.

Keywords—*curriculum standard; digitization; network resource*

I. INTRODUCTION

The rapid development of modern information and technology creates a digital learning environment for college students and thoroughly changes the past daily life and learning style. Teachers' teaching and students' learning no longer completely depend on classroom, chalk and books. They are not confined to specific time and place. It changes from traditional single lecture-type teaching model to the model of interactive learning between teachers and students as well as students' independent study. Above all, represented by communication network, smart phone and tablet PC, “online learning” is accepted by more and more people. Meanwhile, it accompanies some problems. For example, for students, how to use online course resources to carry out independent study and inquiry-based learning; how to use online course resources to effectively improve students' information literacy and cultivate students' spirit of innovation; how to build new teaching mode of online course resources; how to grasp application strategy of online course resources. It cannot do without curriculum standard to solve these problems.

II. CURRENT SITUATION OF CURRENT DIGITAL COURSE CONSTRUCTION IN COLLEGES

Digital course is a kind of “video-based” and “easy to spread” online learning course. As a special curriculum organization form, it has unique “digital” and “network-based” characteristics and also embodies basic structure of curriculum and inherent law of learning. Standard and normative network teaching of digital course can effectively improve the teaching quality and level and promote the pace of modernization construction of higher education. Therefore, the teaching of digital course also becomes more and more popular. But

compared with rapid development of network hardware construction in campus, the speed and quality of teaching resource construction in colleges still cannot meet the requirements of modern teaching in colleges. It mainly exists the following problems:

A. *Maintenance and Update of Courses Has Slow Pace and Low Use Ratio*

Digital course construction lacks standards and specifications. Document format, standard of classification and processing procedures have very great differences. Many schools pay attention to hardware construction and attach less importance to or lack application construction. It mainly shows in that network environment improves and develops continuously, but the teaching resources bases are relatively backward on contents and forms. They cannot timely supplement and update, cause outdated resource contents and cannot meet the requirements of users. Teachers' achievements of teaching design cannot be uploaded in time. Students' works of learning also cannot be presented timely. It influences the enthusiasm of teachers and students to use resources as well as reduces the use ratio of resource database.

B. *Pay Attention to Quantity and Attach Less Importance to Quality*

The contents of digital course are increasingly richer and its forms are more and more diversified. But in practical application, there are deficient high quality resource contents and rare resources that meet the requirements of discipline construction and students' independent study. The root cause is that it only pursues quantity instead of pursuing quality and characteristics on the construction of resource database. The resource database becomes simple accumulation of materials such as courseware of discipline, teaching videos and examination questions. It lacks platforms suitable for course integration and investigative study. It is difficult to deeply apply resource database and make it play a more important role.

C. *The Expansion of Resource Content Neglects Independent Research and Development*

At present, there are three resource sources of teaching resource database: The first is collection and purchasing; the second is to download relevant information on network to sort; the third is independent research and development. The collection or purchasing of finished products resources is

“borrowism” and saves the time for courseware making. But for actual requirements of teaching of specific subject in each school, it is not targeted and systematic, with poor education practicality. Independent research and development of resources conducted by teachers can better closely integrate disciplinary knowledge, characteristic of subject and students’ requirements, suitable for specific teaching situation and ever-changing actual teaching conditions. It helps to construct teaching resource databases with unique characteristics, organically combine advanced technology and ideas of information technology development with our educational practice.

In the process of digital course construction, it appears the phenomenon of “pay attention to videos and attach less importance to research”. Looking from principles of curriculum, the research and development of digital courses not only need to pay attention to “what to learn” of students, but also reflect “why learn” “how to learn” and “what is the degree of learning” of students. Therefore, the curriculum structure cannot be simply equal to video production and transmission of network information. It needs to clearly reflect the relationships of “learning objectives”, “network interactivity” and “learning evaluation” of courses. It shall ensure that after learning the courses, students can effectively solve learning problems and reach expected objectives of digital courses.

D. Digital Course Construction Neglects Systematic Teaching Design

Because it doesn’t make full use of guidance of modern teaching theory and educational technology theory and lacks systematic teaching design, it is impossible to better give play to advantages of multimedia and network teaching. The current digital resource platform cannot well exert the assistance for teachers’ teaching. It is necessary to reform and adjust it, center on specialty and integrate curriculum development and reform. Quite a number of network courseware still rests on the levels of “movement of books” and “electronic page turning”. The existing teaching resource database lacks resources, especially multimedia teaching resources related to specialty. Moreover, the existing teaching resources are not practical and targeted enough and neglect teaching requirements.

In digital course construction, it appears problems of “pay attention to instruction and attach less importance to design”. The goal of research and development of digital course is to promote students’ learning. National curriculum reform also clearly put forward, “It is necessary to change the situation that the courses pay excessive attention to imparting knowledge, reform presenting mode of teaching contents, students’ learning style, teachers’ teaching methods and interactive mode of teachers and students through information technology”. However, analyzing current digital courses, the presenting mode of contents that “teachers teach and students listen to” still occupies the dominant position. In terms of learning environment, except for changing traditional “face-to-face teaching” into “network video transmission” for students to acquire learning information, the nature of learning style

hasn’t changed radically. It is impossible to better help students to learn creatively.

III. PRINCIPLES OF DIGITAL COURSE CONSTRUCTION IN COLLEGES

Digital courses help students to get learning information whenever and wherever possible in a relatively short period of time through network. Network learning has high degree of autonomy, highlights selection and emphasizes construction. The knowledge generation of students is formed in interactions with learning contents, education instructors and other learners through network tools. Aiming at problems existed in the current digital construction process, in order to build courses that meet the requirements of digital course construction and adapt to the requirements of self-study of students, it is necessary to follow the following principles:

A. Combine with Curriculum Standard

Curriculum standard is the basic requirement formulated on the basis of analyzing students’ cognitive characteristics, disciplinary knowledge and social requirements. It is the basis of textbook compilation, teaching, assessment and examination assignment, also the foundation and basis to manage and evaluate curriculum. This shows that the construction of digital courses shall be not partial to any element, but base on understanding students’ current learning situation and build digital courses suitable for students to learn according to curriculum. Firstly, understand the structure of curriculum standard and characteristics of keywords, judge cognitive level of learning represented by it and knowledge point that should be grasped and determine teaching objectives according to actual teaching needs. Secondly, base on requirements of curriculum standard, determine learning methods and goal of digital course construction according to teaching objectives and ensure that the goal of digital course construction conforms to cognition level and knowledge contents required by curriculum standards. Meanwhile, the digital course construction shall be scientific instead of simple accumulation of digital resources such as materials of subject, electronic courseware and network courses. The construction should integrate curriculum standards. Digital courses formed in this way can make students’ learning have a definite object in view and their learning effects get twofold results with half the effort. If learning objectives are unclear and problems and difficult points appeared in learning process cannot be solved in time, then the digital courses exist in name only and will be a waste of resources.

B. Digital Course Construction Shall Pay Attention to “Learning Content Center”

“Learning content center” is the current relatively widespread direction of digital course construction. Looking from education taxonomy, knowledge can be divided into “factual knowledge, conceptual knowledge, procedural knowledge and reflective knowledge”. Each kind of knowledge has different study characteristics and adopts different learning style according to needs. Therefore, it is necessary for construction of digital courses to base on analyzing learning contents and aim at selecting knowledge

classification. Its construction is divided into three steps. (1) Decompose textbook contents. Make it clear that which contents are necessary to be made into digital courses according to knowledge types of teaching materials; (2) Determine explanation strategies and methods of digital course contents. Intensively point teaching contents to key knowledge points and determine explanation strategies and methods according to characteristics of knowledge point and knowledge type; (3) Record and post teaching videos. Design explanation script and record teaching videos according to main points of textbook contents and teaching strategies. Looking from process of construction, digital courses of “learning content center” take “content analysis” as the starting point of construction, get rid of restriction that “technology decides learning methods” and promote the position of courses in technical environment to some extent. From the perspective of learning theory, digital courses of “learning content center” inherit design philosophy of behaviorism, hoping to use the way of “video reinforcement” to stimulate learners to repeatedly learning knowledge contents. But there is no doubt that it neglects students’ dominant position and weakens inherent tension of digital courses by excessively emphasizing explanation of learning contents, neglecting students’ learning characteristics and organization rules of course contents and artificially dividing “course contents” and “learning process of course”. It is impossible for dull video explanation to stimulate students’ internal motivation of independent study.

C. Digital Course Construction Shall Attach Importance to “Center of Learners”

Digital courses of “center of learners” take students’ cognitive abilities as the core, help learners to understand course contents, improve construction and application performance of digital courses through analyzing relationships between characteristics of “digital technology” and learners’ information system. The construction steps can be divided into: (1) Analyze cognitive characteristics and learning requirements of students and determine their cognitive strategy for learning; (2) Organize learning contents, design learning activities according to cognitive strategies of students and create learning environment through the way of digital course videos; (3) Record the process that students make use of digital course videos to learn, analyze learning status of learners and give suggestions for further study of learners. The construction of digital courses of “center of learners” shall follow cognitive learning theory and reflect the idea that “learning is not a passive process but to learn actively on the basis of personal knowledge”. Emphasize the learning environment construction of digital courses to guide students to participate in learning and realize meaning construction of personal knowledge. Looking from learning style, digital courses of “center of learners” embody students’ dominant position and create corresponding learning environment according to learning requirements of students, improve the performance of students in all kinds of complex cognitive tasks and determine learning contents on the basis of personal knowledge requirements.

IV. PROBLEMS THAT DIGITAL COURSE CONSTRUCTION IN COLLEGES NEEDS TO PAY ATTENTION TO

The construction of digital resource database includes two closely related links, construction of resource content and construction of resource platform. Resource content is the footstone of construction of teaching resource database. The basic resources of digital course construction include main construction contents such as course introduction, teaching program, course director, study guide, important and difficult points, assignments and exercises, teaching team, teaching video (no less than 20), PPT courseware (no less than 20). In the process of digital course construction, it is necessary to pay attention to the following problems:

A. Combine Co-construction with Sharing

Co-construction and sharing and application of high quality resources are the cores of educational information. Improve organization and utilization of teaching resources, integrate and share excellent teaching resources, avoid low level and repeated development in the process of multimedia courseware making, better exert radiation effects of high quality resources. The ultimate purpose of resource database construction is to serve teaching. Therefore, it is necessary to take characteristics of subjects in this school into full consideration no matter on contents or functions, take modern educational thoughts and theories as the guidance, center on teaching activities, select and organize all kinds of teaching resources according to knowledge points of subjects and construct learning environment with rich contents, vivid forms and timely interaction that takes students as the main part.

B. Digital Course Construction and Technology Platform Have Sustainable Development

Digital courses shall timely update resources and have timeliness. The teaching process is the process of interaction between teaching and learning. In order to ensure long vitality of learning website, in the process of teaching, if teachers find that some learning resources cannot meet the requirements of learning, they need to be updated timely. In the process of learning, the learning outcomes of students can also inject new vitality to the website. This kind of learning resources can better stimulate students’ learning enthusiasm and promote the change of students’ learning style.

In addition, there are always difficult points appeared in teaching. It is difficult to break through only by simply replying on text. Teachers shall start from the perspective in favor of students, collect or make relevant courseware provided for students to operate autonomously according to requirements and select courseware that synchronizes with those being learnt by students or having been learnt by students already. Teachers can guide students with keen interest to further improve teachers’ courseware or students’ works and upload them to serve as teaching cases and enrich the contents of digital course learning. Letting students participate in the co-construction will set an example for students and stimulate them.

In order to make teaching resource database in colleges can meet different teaching and learning requirements of teachers

and students and realize smooth upgrade with the development of science and technology, systematic design and realization must have certain technical perspective. It includes not only advancement of contents such as structure chosen by database, format and classification methods adopted by database, but also advancement of development platform and specific development of operating system. It is necessary to stick to principles of cost performance and step-by-step implementation, base on financial resources of schools and select suitable and enough equipment and software. Therefore, in the construction process of teaching resource database, it shall make the system have elastic capacity and expansion capability and continuously “internalize” internal and external demands of the system with the changes of hardware and software environment and application requirements and development of discipline and curriculum. Besides, it shall also make the system manageable and have certain monitoring and evaluation mechanism, build dynamic resource database that has the characteristics of flowing production and continuous update and make the resource database realize sustainable development.

C. Strengthen Modern Education Technology Training for Teachers

Resource development of each way cannot do without the participation of teachers. Therefore, it is of vital importance to train teachers. Many schools have advanced network working environment, wide network space and rich network resources, but teachers’ level of computer application cannot keep pace with the construction of hardware environment in school. Teachers cannot effectively use information tools to integrate and innovate in material resources. Schools shall aim at holding different types of study classes, adopt patterns of study and discussion and experience exchange, improve teachers’ level of modern education theory and professional skills through training to adapt to modern teaching.

V. CONCLUSION

In the process of digital course construction, teachers impart curriculum knowledge to students. What’s more, they spread learning method of curriculum. Digital curriculum environment will prompt the great change of education pattern and bring substantial changes for teachers’ teaching and students’ learning. From the perspective of learning, many existing knowledge on books will be published on the network through videos for students to choose to learn. Classroom still exists. But when students attend class, they will not center on acquiring knowledge but center on broadening horizons. The main learning activity is discussion. Carry out discussion and analysis on problems put forward by students after they watch teaching videos. Students will have new understanding for contents learnt by them in the collision of all kinds of ideas. From the perspective of teaching, it will face more enormous challenges. Students not always follow teachers to learn. They can choose videos of teachers that they are satisfied with on the network to carry out independent study. On one hand, just as students, teachers should learn and research these videos; on the other hand, teachers shall organize students to discuss in class. From the perspective of resource utilization, each

student can enjoy course resources of best teachers in the region, which can greatly relieve the longing of parents and students for high quality resources. From the perspective of education evaluation, information-based course environment can carry out many data recording and processing, help teachers and students to make personalized analysis and judgment as well as implement individualized teaching and learning.

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