Issues and Innovation of Education Technology Course in China

Huang Disheng, Yang Zhiqiang

Educational Science Institute
Xinjiang Normal University
People's Republic of China

Tao Shi
China New Zealand Cultural Exchange Centre
Auckland, New Zealand
joyoushi@hotmail.com

ABSTRACT

With rapid development of computing and information technology in China, developing web-based courses is getting feasible. However, the decision should not merely be based on how wonderful the technology is, or developing tools are, but on both curriculum suitability and technology capability. In the particular context of China, the courses of pedagogy, psychology and educational technology are established as compulsory subjects for all students in many teacher institutions. However, the necessity of the provision of the educational technology course has been concerned and the curriculum innovation has been recognized in last decade. In this paper, issues related to curriculum models, course contents and teaching methods are identified and discussed. Several approaches towards the course innovation are proposed for the further development of Web-based learning system in the second stage of the project.

1. INTRODUCTION

In China, the courses of pedagogy, psychology and educational technology are established as compulsory subjects for all students in many teacher institutions. For many years, the curriculum innovation has been recognized and the development of Web-based course has been considered recently. However, the decision should not merely be based on how wonderful the technology is, or developing tools are, but on both curriculum suitability and technology capability. Therefore, it is imperative for a designer to examine the curriculum in a particular context before the design to assure agreement between the Web-based learning system and the overall curriculum. In this paper, the history and development of educational technology in China are firstly reviewed. Issues related to curriculum models, course contents and teaching methods are then identified and discussed. In the particular context of the Xingjiang Normal University, China, several approaches towards the course innovation are proposed as the first step towards a successful design of a hypermedia learning system of comprehensive educational science.

2. EDUCATIONAL TECHNOLOGY

IN CHINA

Educational Technology (ET) was evolved from the Audio-Video Education in USA during 1920s to 1950s. In China, media-assisted instruction, such as slides and films, could be dated to 30s last century. However, the acknowledgement and development of the educational technology started only from 1970s as the rising of Open TV University. At the earlier stage, administrative organizations were setup in almost of all provinces, giving publicity to the advanced educational models and methods. At the same period of time when the Open TV University was flourishing, most of universities imported audio-visual equipments for educational technology, laying a solid foundation for the further development of the ET. With the acceptation and understanding, more and more instructional media was introduced in the teaching of schools, which increased the demand of specialists and technicians of the ET. Therefore, starting from 1980s, more than 30 normal universities and institutions established ET subjects, including three levels of degrees of bachelor, master and doctor, for the training of ET specialists and teachers. Gradually, ET as a discipline was taking its shape. At the same time, nearly 50 universities and 300 institutions provided the courses of pedagogy, psychology and educational technology as compulsory subjects for all students, imbuing the students - the future teachers with new ideas of schooling, teaching, and learning (Nan, 1985, Nan, 2000).

3. THE MODELS OF EDUCATIONAL TECHNOLOGY COURSE

According to "The Guiding Principle of China Education Reform and Development" , the government calls for developing Open University and educational technology in schools, extending advanced teaching methods (Zhong, 2000). In addition, " The General Program of China Teacher Skills Training" stipulates definitely training goals and contents of mastery of teaching skills with advanced educational technology (Zhong, 2000). Therefore, it is the one of main tasks of training goals for normal universities to foster students to keep abreast of new methods and technologies of teaching.

In China, current compulsory ET courses are provided independently. They neither belong to art subjects related to education, nor to science subjects related to physics or computer technology. The compulsory ET courses are of quality courses whose objectives are to enable students to be able to use instructional media and design multiple media teaching materials. Basically, there are two types of curriculum models at present in China, shown in figure 1 and figure 2 separately.

The first model lays emphasis on basic theories and the independency of the advanced ET discipline. It is considered in this model that the ET can be an independent discipline of which the first direct theoretical foundations are pedagogy, psychology and mass communication theory, and then the next

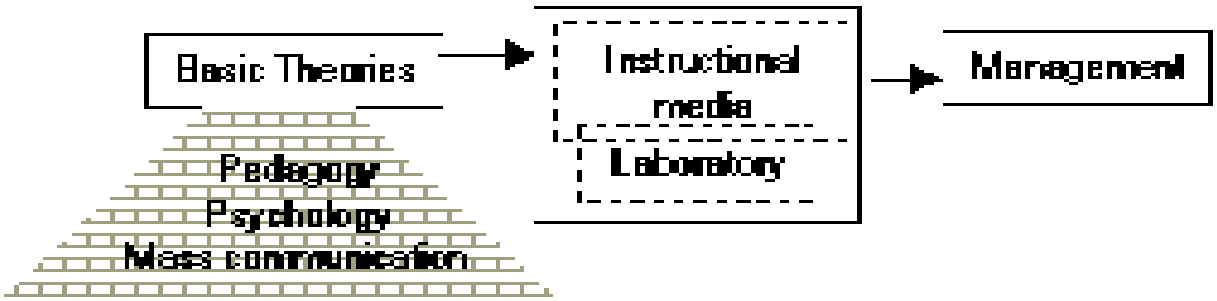

Figure 1

The curriculum model 1

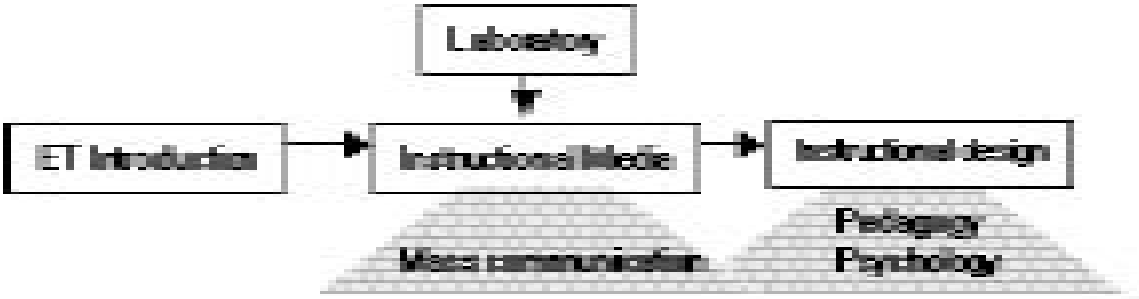

Figure 2

The curriculum model 2

ones are the theories of those related to disciplines of social and natural sciences. Based on those theories, the ET establishes its own basic theory. Following this model, the textbooks consist of three parts - basic theory, instructional media, and management of organization and media - for obtaining the entirety of the discipline. The ET theories include media teaching process, principles and methods using media. The media-assisted teaching process refers to the optimization of teaching process by using media to convey the learning contents. The five teaching principles are 1) defining goals, striving for actual effects, 2) combining seeing and listening with thinking, 3) optimizing media selection and combination, 4) feedingback promptly and accurately, 5) participating of lecturers and students. The teaching methods include 1) broadcasting method and programming method with the goal of imparting knowledge, 2) mini-teaching method for the mastery of teaching skills 3) examining method to check students' work (Nan, 1985). In the part of instructional media of the textbooks, the media is classified into 4 types according to media properties. They are optical media, audio media, video media and computer media. The structures and working principles of the media and the methods of making multiple media materials are introduced in this part. In the third part, the organization administrative management and media equipment management are mainly mentioned. In this model, laboratories are arranged at the end of each chapters of the instructional media part. As for the allocation of class hours, the first part of theoretical foundation uses about a quarter of the total time, the lecturing of the instructional media occupies about half of the time, and the rest of the time is used for the media management. The teaching methods vary with individual lecturers.

Unlike the first model, the second model stresses the advanced ET is a branch of the ET discipline taking systematic teaching methods as framework. It is believed in this model that the ET takes teaching and learning theories of educational science, mass communication theory and systematic science theory as its theoretical foundation. By employing achievements of modern science technology and ideas, and methods of systematic science, the ET explores the techniques and means of promoting teaching effects as well as the theory, law and methods of optimizing teaching process. The basis for this definition is the objectiveness, reproducibility, measurability and controllability of teaching process. The believers of this model think that the ET is the study object of the educational technology science, while the advanced ET is the ET in a broad sense employing advanced instructional media, which can be comprehended as the development of instructional media and the design of teaching process (Wu, 1999). Therefore, the textbooks corresponding to this model include the concepts and scope of the ET, instructional media and instructional design in order to obtain the systematicness of the ET discipline. The first part of the textbooks normally introduces the ET concepts and knowledge system. The second part is also about instructional media as in the former model, but the media is categorized into six sets according to the produce forms of media. They are non-projective visual media, projective visual media, animation image media, computer media

and remote delivery systems. To each type of media, the features, functions and instructional application are discussed from the viewpoint of psychology and communication theory. In the third part, the systematic design methods of instructional process is introduced, in which the media selection and use are included. The laboratories of the course are designed into modules, separated from the chapters, with an emphasis on instructional application of media. The allocation of class hours is nearly half to half on the second part and the third part, as the first part uses relatively short time.

4. ISSUES

In summary of these two models analyzed above, it is clear that both models consist of three parts. Part one in both models is about theoretical foundation, including pedagogy, psychology and mass communication theory. Part two introduces instructional media and its application in teaching process. However, the contents of the third part are quite different. In the first model, media management is only mentioned briefly, while in the second model, six chapters are involved to discuss systematic design methods of the teaching process. There are some issues related to both models discussed as follows.

4.1 Unnecessary Repetition of the Theories in Educational Courses

In China, the courses of pedagogy, psychology and educational technology are established as compulsory subjects for all students in most teacher institutions. According to the discussion above, it is identified that the basic theories elaborated in theoretical foundation in both curriculum model are discussed in the courses of pedagogy, psychology, and teaching methods. As for the instructional design, it also belongs to courses of educational disciplines. Thus, the basic theories in current ET course are unnecessary repetition of the theories in educational courses.

4.2 Unnecessary Contents of Media Structures to Users of the Media

Quite a many chapters of the textbooks in both models discuss the structures and working principles of various media, which are much difficult to those students in arts and social science. In fact, these contents are unnecessary to users — teachers of the media.

4.3 Out of Date Contents to Future Teachers in the Information Society

With rapid development of advanced computer and network technology, it is a tendency to use multimedia, digital equipment, and network for the delivery of teaching/learning materials. However, some of the contents in the instructional media part of both models, such as the producing of project slides, video tapes, etc, are out of date. In addition, multimedia-teaching materials are available now in markets of China. Therefore, those contents should be upgraded.

4.4 Unattractive Laboratories to Students

Some laboratories are lack of attractiveness, and some cannot provide students enough equipment for practices. Some lab materials are too expensive to be available for every student. With more and more computers available in most of universities, many of labs can be carried out by using computers, such as the producing of project slides.

As discussed above, it is assured that it is necessary to provide compulsory course of the ET, but the curriculum models need innovation, and the textbooks should be revised accordingly.

5. APPROACHES TO INNOVATION

First of all, the authors believe that the advanced ET (using advanced technology in teaching), with its own particularity, is a part of the ET in a broad sense, and is also the research object of the ET discipline. Distinguishing with the generalized ET, the advanced ET course should lay emphasis on the instructional application of media and technology. Considering the particular context of China and the Normal University, the advanced ET course can be

improved in curriculum model, contents of textbook, and teaching methods.

The innovation of curriculum model: As the merging of previous department of ET and department of Education into the institution of Educational Science, it becomes possible to make an overall design of the curriculum including pedagogy, psychology, teaching methods, and advanced ET. According to the previous analysis, it is known that both curriculum models of ET course lay theoretical foundation on pedagogy, psychology and mass communication. Therefore, in order to avoid repetition, the improved curriculum model showed in figure 3 takes pedagogy and psychology courses as prerequisite of the ET course, so that some contents of theoretical foundation part can be covered. The instructional design can be an independent course or be combined with the course of teaching methods into a new course, which can also be considered as the prerequisite of ET course. As a result, the contents of the ET course can focus on the instructional media and the practice of the media selection and use, which is a part of contents of the instructional design course. In addition, students only need to know about very basic equipment structure and working of media. The knowledge, such as physics and computer science, can be obtained either from other compulsory courses or from ET course. It is also recommended to teach students of different disciplines differently. Aesthetics education is a necessary quality training for all students to be able to make multi media teaching materials nice, so it should be included in the ET course. The improved curriculum model is shown in figure 3.

The revision of textbook contents: As the curriculum model changes, the contents of textbooks should be revised correspondingly. Firstly, the part of the theoretical foundation only needs to introduce the ET concepts and scope, and then the mass communication theory can be elaborated. In the second part, the media can be classified into 4 types as in the first model, each of which should be described with emphasis on the instructional applications. In addition, contents about computer-assisted instruction and Web-based learning should be augmented. The laboratories in this part can be arranged at the end of each chapter. The last part of the lecture notes focuses on practicing the systematic methods of the instructional design, stressing the media selection and use.

The variety of teaching methods: New teaching methods should be employed for teaching educational technology. It is recommended that the variety of teaching methods, such as broadcasting method, programming method, mini-teaching method and examining method (Nan, 1985), can be considered for the delivery of different contents. The method for teaching the part of media selection and use can be an integration of lecturing, group discussing and practicing, and mini-project completing as the final results of the course study.

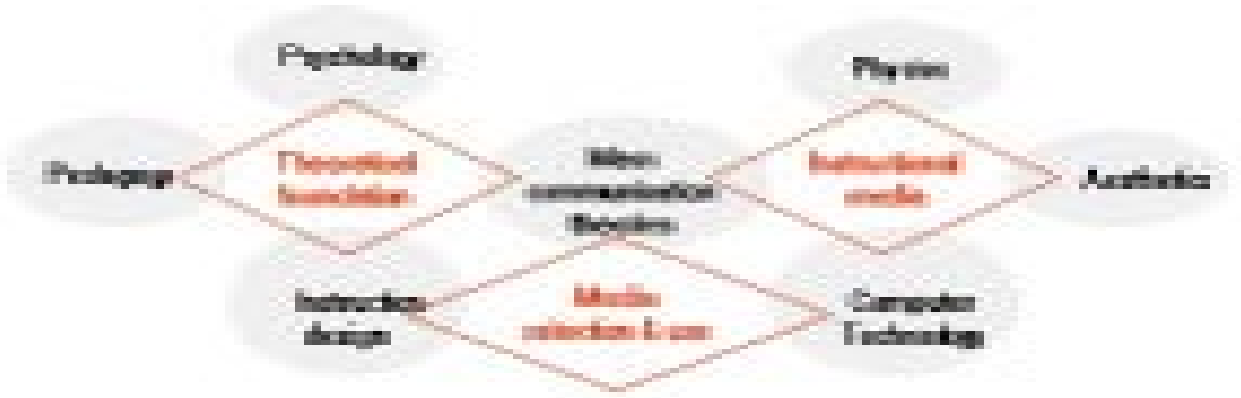

Figure 3

The improved curriculum model

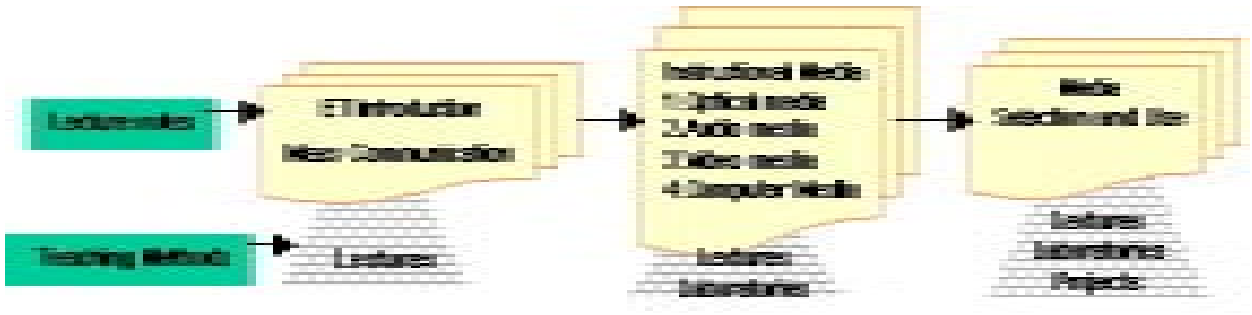

Figure 4

The structure of the course notes

6. CONCLUSION

A good, solid curriculum design provides the foundation by which good instructional design is implemented and well-structured teaching material is produced. Therefore, a Web-based teaching/learning material can only effectively complement the entire curriculum when selected in conjunction with well-structured subject contents as well as assumed teaching methods. The improved curriculum model discussed in this paper can be seen the foundation for the revision of the course notes. This leads to the conclusion that the design of a Web-based learning system upon the revised course notes may increase the possibility of further optimisation of learning objectives as determined by the innovated curriculum.

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