

College ideological instruction teaching method based on multimedia CAI

Zhang He*

Department of Education, Baoji University of Arts and Sciences, Baoji, Shaanxi, China, 721013

Received 23 May, 2014, www.cmnt.lv

Abstract

With the implementation of college ideological instruction teaching method reformation, multimedia and “three dimension” instruction method enjoy more and more popular among colleges. People place high hope on the new instruction pattern and regard it as the effective solution for education in college so far. This paper studies reformation of ideological instruction teaching method to analyse how to make use of multimedia CAI method and “three dimension” teaching method.

Keywords: college ideological instruction, multimedia network, CAI, “three dimension” teaching pattern

1 Introduction

With the progress and development of age, computer network enjoys popularity and develop rapidly. Science and technology is also widely applied in education. People pay more and more attention on spread of ideological instruction knowledge when they emphasize school performance. However, traditional teaching method restricts speed of ideological instruction and input of teaching knowledge. It has a negative effect on the effect of ideological instruction. For many years, ideological instruction always adopts traditional pattern. Teachers repeat what the book says and then ask students to think by themselves or memorize some knowledge and key point mechanically to sit for examination. Under this pattern, teachers are the leading role in the class. They offer few real cases for students to analyse and discuss. Therefore, CAI pattern is born at the right moment. It relieves educators from single education concept.

Computer Aided Instruction, short for CAI, becomes the important research issue of current teaching means in education field. CAI system refers to computer aided instruction system that composed of relative CAI course ware. Its fundamental objective is to realize effective teaching for students, which is consistent with that of traditional class teaching. CAI teaches students with computers. It aims to change traditional ideological instruction pattern and realize combination of leading function of teachers and subject role of students and combination of former lesson and latter lesson. It can fully inspire subjective initiative of learning ability of students and show “student-oriented” teaching concept in the true sense. In the process of lessons preparing, teachers collect and sort materials related to class content, apply network, audio and video technology to make course ware and use

multimedia technology to play in class. Multimedia three dimensional teaching methods contain a large amount of multimedia information for students to obtain knowledge by various senses. Students can be more actively, effectively and comprehensively to participate whole process of ideological instruction. And the teaching method creates colourful learning environment of three dimensional ideological instruction teaching knowledge, improves learning efficiency of students and ensures the effect of ideological instruction teaching.

2 Multimedia characteristic

Research on characteristic can optimize the combination of multimedia in course ware and make layout and presentation of media factors have large visual impact and attraction. It can meet the practical needs of current multimedia teaching.

2.1 THREE DIMENSION

According to the current mainstream trend of multimedia, three dimensional images and text content is favoured by learners. Three dimensional multimedia can present plane content more specific and detailed for learners to understand an object more intuitively in different perspectives and aspects. Three-dimensional character presented by media factors break through previous content presentation form. Learners can have different mental feeling when they receive the content presented by multimedia course ware.

2.2 DYNAMIC

If dynamic effect is introduced into multimedia presentation, the presentation means will produce strong

* *Corresponding author* e-mail: Zhh.1226@163.com

impact and attraction for learners as well as centralize their attention. Dynamic factors can not only flexible multimedia but also present static things to students by multiaspect and multi-angle controllable means. Primary content is presented carefully in the form of freeze-frame play by the operation of teachers.

2.3 VISUALIZATION

Research shows that combination of different multimedia can play the effect to the largest. Therefore, visualization of content cannot be neglected based on the dynamic and tridimensional design and manufacture of course ware. Critical points of course ware should focus on image and then add words and sound for explanation. It can vivify and visualize content. And learners can be clear at a glance on the key point of the course ware.

3Multimedia learning theory

American psychologist Richard Meier detailed studied multimedia and proposed multimedia learning theory in 1990's. His theory is based on dual coding theory and constructivism theory of Pevear and cognitive load theory of Sverre. The theory includes dual channels assumption, limited capacity assumption and active processing assumption.

3.1 DUAL CHANNELS ASSUMPTION

External information is transmitted and processed by auditory sense and visual sense channel. Visual information such as text and picture is transmitted and processed by visual channel. External sound information is collected and processed by auditory sense. In the late stage of processing, information such as picture and text will transform into sound after initial processing of vision. At last, it will be transmitted to auditory channel for last processing and storage. It is shown in Figure 1:

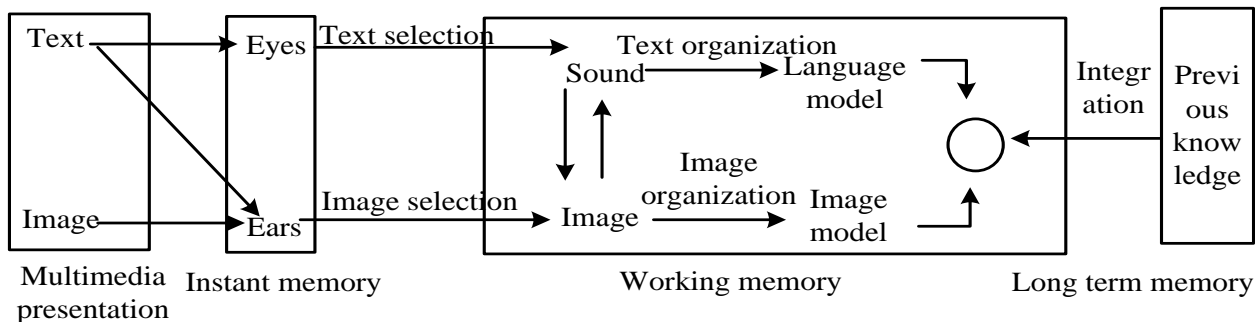


FIGURE 1 Dual channels assumption diagram

However, effective inspiration of reception and processing function of two channels is important for effective learning of learners in multimedia teaching because visual sense and auditory sense are mutually independent and the capacity is limited.

3.2 LIMITED CAPACITY ASSUMPTION

Efficiency of multimedia learning is restricted by the limited capacity of working memory. Information in working memory is the noticed content when instant memory is obtaining information. In other words, content in working memory is the knowledge that we need to obtain and other irrelevant information is shielded when it input into instant memory. Working memory connects instant and long term memory. The memory we needed will be screened and put into long term memory after processing to form knowledge base. However, the capacity of working memory is limited, which is consistent with instant memory. If external transmission information exceed the bearing capacity of memory capacity, learning of learners will be affected. External information will be hard to be related to the knowledge in long term memory and cannot be stored into long term memory. Text, image and sound information are included. Therefore, efficiency

improvement of learners is related to the reasonable distribution of text, image and picture in course ware.

3.3 ACTIVE PROCESSING ASSUMPTION

Active processing assumption has three processes. That is, selection, organization and processing. External information enters brain through eyes and ears of learners. It is a selective process. This process is screening the information entering into learners eyes according to the requirement of learners. It screens out important information. Then the information enters system processing through learners' eyes. Meanwhile, the needed external sound information is sent into auditory processing system after screening for learners reorganizing needed content after screening. After that, information becomes more complete and fluent. And image base of visual and auditory sense will be formed according to the ultimate requirement of learning. Last is integration process. Learners build connection of image and sound information and associate these two kinds and previous information of long term memory. It forms new knowledge schema and stored in long term memory after last processing. However, sound and image information is in working memory when it associates with long term memory. Therefore, the size of

working memory capacity directly affects the process of active processing. The process is repeatable. Thus, learners can make up lost information caused by limitation capacity of working memory through many times learning.

4 Multimedia course ware design of college ideological instruction

Broadly speaking, multimedia course ware design is preplanning for a whole set of teaching assisted system, imagination and arrangement for the whole plan and also the detailed regulation and blueprint. Design of multimedia course ware mainly includes visible teaching design, structure design and interface design. Only the comprehensive arrangement and scientific design in teaching course ware design can make the multimedia course ware become scientific and reasonable and possess certain artistry, contemporaneity and technicality.

4.1 DESIGN OF IDEOLOGICAL INSTRUCTION COURSE WARE TEACHING

Teaching design is the basis of multimedia course ware design. It adopts reasonable method to analyse teaching problem systemically, clears teaching process and objective and establishes strategy for teaching problem and process. The purport is to solve teaching objective, content and method. Therefore, teaching design has important function in the process of design process of visual multimedia.

4.1.1 Analysis of teaching content

Teaching content is to realize teaching objective stipulated in outline. It includes various teaching, training and practical activity accepted by students and arranged by system. Analysis of teaching content is the basic working of teaching. It mainly includes depth and breadth of teaching. It reveals the relationship between parts of teaching. This work is usually fulfilled with the help of teachers who have rich teaching experience and a good command of teaching rule. Teaching content has certain design ability and hierarchy. The number of levels of ideological instruction content division is consistent with the levels in communication. And the following procedures should be followed:

a. Select and organize units. Confirm out general objective for the course of ideological instruction. Then the content needed to be learned is divided into several modules and done organizational hierarchy to simplify the content for students to learn step by step.

b. Confirm unit teaching objective and the knowledge that need to be achieved when students is learning the content of ideological instruction unit. Only when the chapter content is confirmed can teachers teach students accordingly. And students can understand which content need to be understood in the class.

c. Evaluate the content and separate the unit content projected in ideological instruction. A big concept is divided into several small specific concepts. Or a complicated knowledge point is divided into several small knowledge points for absorption.

4.1.2 Setting of teaching objective

It is the second procedure of teaching analysis. Its objective is to analyse, which objective and degree can be students achieve through knowledge learning of that part. Teaching objective can be divided into several hierarchies according to learning requirement. For instance, we often require memorizing some concept and evaluating some idea in ideological instruction class. And these objectives should point out degree and standard needs to be achieved for effective inspect and measure learning effect of students.

4.2 DEIGN OF COURSE WARE STRUCTURE

Organization structure of ideological knowledge content is varied. Its basic forms mainly include linear structure, branch structure, net structure and tree structure. Traditional multimedia ideological instruction teaching uses linear structure organized by text, sound and image. It has characteristics of ordering from front to back and taking time as node. However, the system structure of multimedia course ware practically is the organization and presentation means of teaching content. Design of multimedia ideological instruction course ware should make scientific program on course ware system according to the whole teaching content.

4.3 GENERAL PRINCIPLE AND DETAIL ATTENTION

CAI is the common multimedia teaching means in college nowadays. Critical factor that present quality and effect of multimedia teaching is manufacture of course ware. Design of this kind of multimedia course ware has its own specific principle and procedure method.

4.3.1 General principle

This kind of course ware is multimedia application software. Text, sound, diagram, picture, animation and image are integrated together through software design and reasonable composing. The following principles need to be following in design process.

a. Controllable principle. Basic requirement of CAI course ware interface is that initiator or learner always controls course ware operation and the course ware is in the form of interaction. Interface is in the form of facing task for learners to fulfil learning task more rapidly.

b. Easy to learn and use principle. CAI software that can be mastered and used by learners in short time is good multimedia.

c. Consistency principle. It means that real world and course ware content should be consistent. The former can shorten the learning time of learners and improve learning efficiency. The latter provides convenience for teachers to make course ware manufacture more convenient.

d. Guiding principle. Learners fulfil study through direct and visualized means.

e. Economical principle. Interface design should aim at reduce the operation time of learners, such as less words input and replace essay question with choice question.

f. Optimal combination principle of media. Utilization and selection of all media information are all serve for ultimate teaching objective. Excess use of media information should be avoided by all means.

4.3.2 Detail attention

a. Colour collocation.

Teachers should select correct colour keynote including background and colour of words for students to see more nature and beautiful ideological instruction multimedia course ware. The tone of the whole screen is also very important. In the process of making course ware, teachers are required to design course ware with unified and harmonious colour and natural style.

b. Design of cover and title

Cover of course ware includes course name, make time and author. Students can clear about the beginning of

course through cover. However, title is the opening words of a new class. It drives students' interest and attention by video or animation. Title design should related to the content of the course. Its length and content should adopt to the whole design and ideological instruction knowledge that imparted in that class.

c. Script design

Script is language description means of software design, which is the bridge between ideological instruction course ware designer and makers and the basis of the whole making. However, course ware designer and maker are assumed by the same person to a large extent in the perspective of current multimedia development. Script designates specific and clear scope on course ware design and making for the maker of course ware. The making of script of ideological instruction generally includes collocation and skip of course ware content arrangement, material organization of page, layout, show time of every page, colour keynote of page, words, music effect and interaction mode of people and computer. Script compiling should design according to the teaching content of ideological instruction teaching plan. Its organization mode, presentation mode and material selection should close to teaching content and plan. Current script design has no specific speculation. Generally, script design includes window presentation size of multimedia material, presentation mode and special effect, collocation and combination of different materials, interaction mode, skip, hot area, hyperlink, control component and a series setting of navigation, return and error control mechanism.

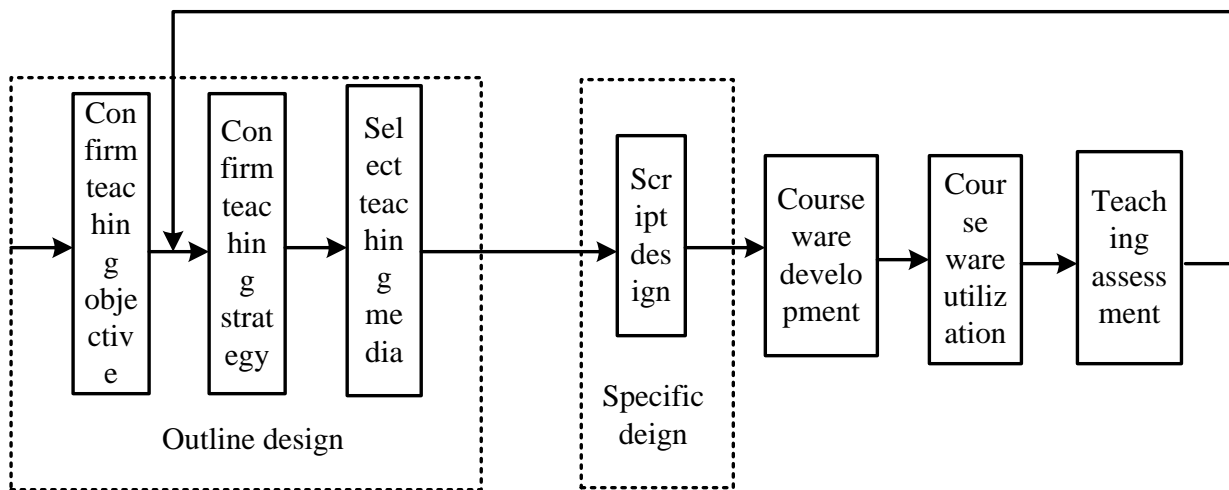


FIGURE 2 Main process of CAI ideological instruction course ware design

Above is the allocation of basic hardware in ideological instruction multimedia teaching. If the equipment is of high quality, then use of multimedia course ware will be handier.

5 Presentation mode of multimedia course ware in college ideological instruction

5.1 DYNAMIC DEMONSTRATION

Multimedia course ware used in ideological instruction class applies PPT as demonstration platform. In teaching process, it is common that teachers switch slide combination manually according to their lecture speed. However, it violates original intention of multimedia

making and utilization. The main function of multimedia course ware is to assist teachers to teach. Only course ware which do not need mutual switch and can operate dynamically can reduce workload for teachers and drew the attention of learners.

Dynamic demonstration means to realize automation demonstration of multimedia teaching content by very few operations. This kind of automation is a demonstration combining teaching content and assisted cognitive material. Some demonstration can present the whole ideological instruction teaching process by one-off animation as showing film. Some require teachers to do separate demonstration according to course content. However, dynamic demonstration is not all dynamic. Importing all

information to learners by one course will cause jam in information reception channel of learners. It is bad for students to understand and receive information and makes learners loss direction and key point. Therefore, teachers should based on outline of ideological instruction teaching in multimedia design and demonstrate chapter. Course ware will stop after the demonstration of one chapter or one knowledge point and pop learning navigation for teachers to explain. And learners can have time to process and memorize knowledge fully. Dynamic demonstration transmit and sort knowledge by visual sense channel of learners for them pay attention to information by sensory stimuli.

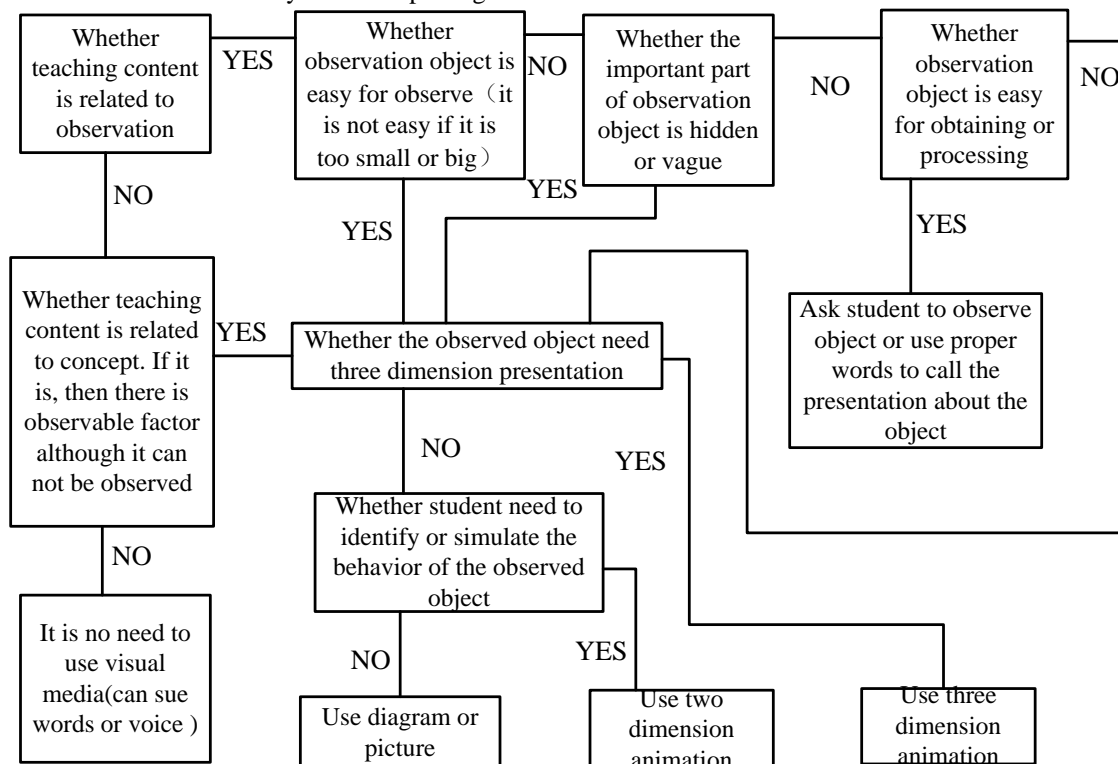


FIGURE 3 Process selection figure of visual media

5.2 ASSOCIATION OF ACTIVITY AND INERTIA

Demonstration of ideological instruction in form of multimedia is various. Association of activity and inertia can achieve teaching assisted task. However, the current educational application pattern is primary in inertia assisted by activity. Generally, it is presented in the screen in form of text. Although picture and video are used to strengthen perceptual understanding, mutual operation of teacher is still needed overall.

Authentic multimedia presentation should be association of activity and inertia. Instant memory of learners is stimulated by means of sound for attention to transmit and sort this kind of information. In the process of demonstration, freeze-frame should be adopted for learners to have enough time to call and memorize demonstration content and do abstract and summary on key

content and theoretical system. Learners can memorize and construct knowledge fully by their means in freeze-frame. In static demonstration, media material such as video, animation and sound should be inserted properly to vivify static text. In addition, addition of sound stimuli can draw the interest and attention of learners and strengthen the understanding and memory for special content structure.

Course ware with association of activity and inertia is primary in visual sense assisted by auditory sense. During ideological instruction teaching, means of auditory sense can make learners to better accept and learn knowledge. Fact proves that rich interest can inspire the effective motivation of learning, mobilize learning enthusiasm and intensify the internal power of learning. Three dimension multimedia teaching can transform perceptual materials in various forms into vivid picture by text, picture, animation and sound. And the abstract and static theoretical

knowledge will be intuitive and vivid. Attractive scene that sense directly. is created by acousto-optic diagram can act on different

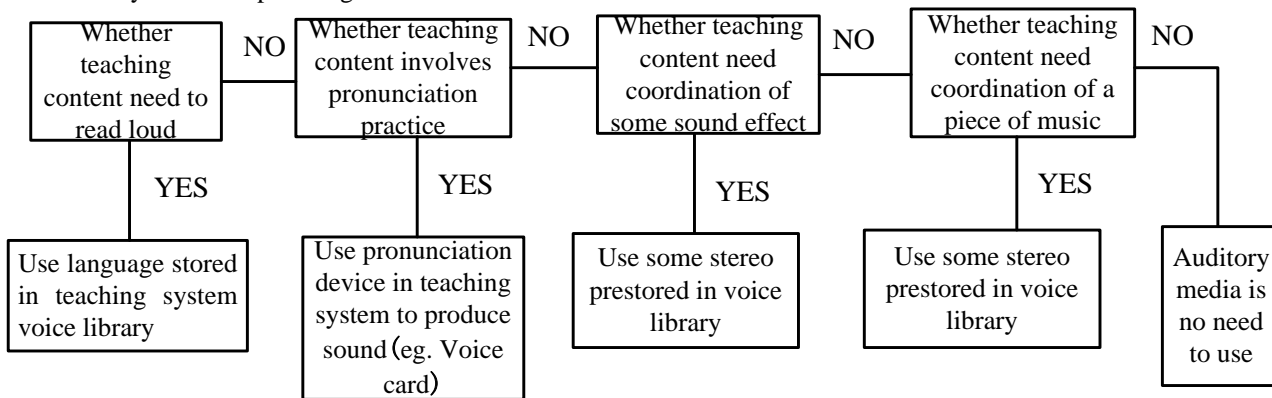


FIGURE 4 Process selection diagram of auditory media

5.3 SUPPORT OF HARDWARE SYSTEM

Design of ideological multimedia CAI course ware can not leave the coordination of hardware system. It is the basic system needed in multimedia course ware development. Hardware system is the basis. That is to say good course design cannot be demonstrated if there is no satisfactory hardware to coordinate.

Multimedia hardware system is the multimedia computer for demonstrating course ware. In course ware design process, collection, sorting, processing and accomplishment of material is a series of work. And multimedia computer with high quality allocation is

required. Multimedia computer applies multimedia function in computer. Basic constitution of multimedia computer is as follows:

- a. Host computer: PC;
- b. video and voice input equipment: camera, microphone, sound recorder, etc.;
- c. video and voice output equipment: projector, projection screen, loudspeaker, stereo headphone, etc.;
- d. NFFC: video card, sound card, video card, network card, etc.;
- e. storage device: CD-ROM, mobile HDD and CD witter; f. Intercrossing equipment: keyboard, mouse, etc.;
- g. Software: operating system, hardware driver and application program.

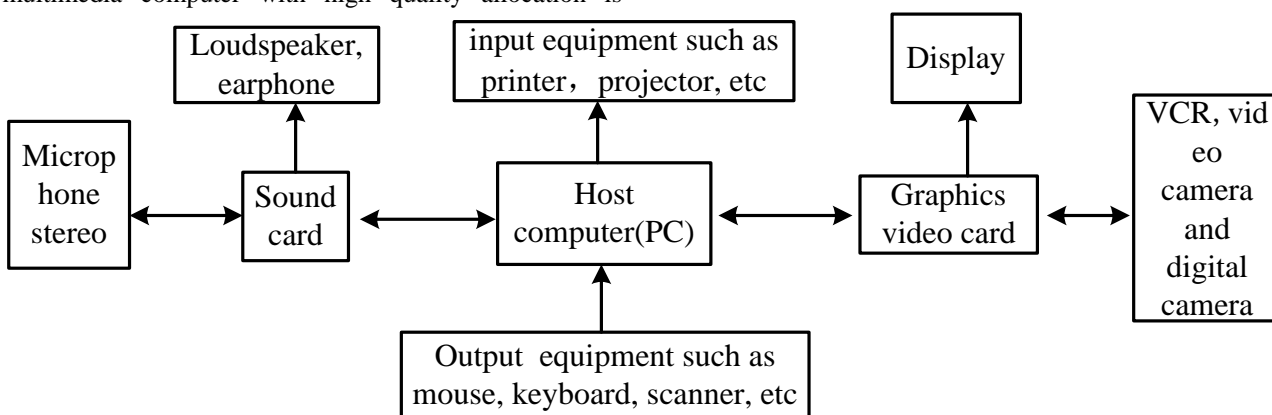


FIGURE 5 Multimedia computer composition figure

6 Conclusion

All in all, traditional method relies on s stick of chalk, a blackboard and a textbook can not keep up with the requirement of age development and meet the need of students' learning for the strong theoretical and synthesis property of ideological instruction teaching and abstraction and complex of ideological instruction teaching content.

Multimedia three dimension teaching is demonstrated to students in form of word, sound, picture, video and music to inspire the learning enthusiasm of students. Meanwhile, it proposes strict requirement for teachers. It requires them

to possess prospective educational idea, strong teaching skills and persistence. Introducing multimedia three dimension patterns into the practice of ideological instruction teaching is a general trend of new round course reformation of ideological instruction teaching. It can give full play of guidance, assistance and monitoring and highlight learning leading role of students. It can help students to better understand and master knowledge and improve professional skill and help teachers to teach students in accordance of their aptitude. As a result, students can do some ego early plan and detection effectively in independent study process and achieve

ultimate adjustment to improve lifelong learning ability and innovation ability.

Science and technology research and development program in 2013 in Baoji City: research for coordinated development problem between local colleges and innovative Guantian economic zone. Fund number: 13SF6-4

7 Acknowledgements

References

[1] Guan H X 2008 *College ideological and political educational theory and practice* Harbin: Harbin Publisher

[2] *Social Science Department of Educational Ministry edit. Selected literature of ideological and political theory course in ordinary university* Beijing: China Renmin University Press 2008

[3] Luo Y G, Zhang Y D, Mei Y Y 2010 Brief discussion on conversion of textbook system to teaching system of ideological and political classes *Ideological and Theoretical Education Tribune*

[4] Lu S X 2002 Research on the basic structure of multimedia technology course content *Journal of Pingdingshan Normal Training College* 2

[5] Ding Y J 2012 Research on application of multimedia course ware of ideological instruction teaching in higher vocational college *Youth Literator*

[6] Ke S Y 2011 Rustic opinion on integration of ideological and political course teaching and network multimedia *Heilongjiang Sci & Tech Information* 22 2011

[7] Diao J Q, Huang M X 2012 Application of multimedia in ideological and political course teaching *China Educational Technique & Equipment* 3


[8] Liao R G 2013 Optimizing political course teaching by skillful use of multimedia *Southern Journal* 2

[9] Tsiriga Victori, Maria Virvou 2004 A Framework for the Initialization of Student Models in Web-based Intelligent Tutoring Systems *User Modeling and User-Adapted Interaction* 12

[10] Rossafri Mohamad 2012 The design, development and evaluation of an adaptive multimedia learning environment courseware among history teachers *Technology*

[11] McWilliams E, Taylor P G 2007 Teacher im-material: Challenging the new pedagogies of instructional design *Educational Researcher* 27

[12] Koper R 2012 PROFIL: a method for the development of multimedia courseware *British Journal of Educational Technology* 94

Authors	
	<p>He Zhang, born in 1978, Shannxi Province of China</p> <p>Current position, grades: lecturer</p> <p>University studies: Master degree was earned in major of pedagogy, Shannxi Normal University in 2009.</p> <p>Scientific interest: educational economy and management</p>