

New Features of Multimedia Courseware Making in Mobile Internet Times

Taking Adobe E-learning Suites 6 for Example

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Abstract With the advent of mobile internet times, the making of multimedia courseware has made new progress and emerged new features on ideas, tools and practical applications. Taking Adobe E-learning Suites 6 for example, the paper explains new ideas of making of multimedia courseware and indicates that tools for making have seamless integration and strong usability and practical application has new features such as cross-platform. The paper expect to provide reference for making and practice of multimedia courseware in mobile internet times.

Keywords multimedia courseware; mobile internet; Adobe E-learning Suites 6; usability; cross-platform

1 Introduction

With the rapid propulsion of educational informationalization of China, information-based teaching will gradually become normal in schools with various levels and types. Multimedia courseware lays foundation for information-based teaching and its quality and efficiency directly influence that of information-based

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teaching. As new technology such as 3G, smartphone, tablet PC and html5 becomes mature, there comes mobile internet times. Making of multimedia courseware has made new progress and emerged new features on ideas, tools and practical applications.

2 New Ideas of Making Multimedia Courseware

New ideas emerge for making of multimedia courseware in mobile internet times.

2.1 Learning theory turns from behaviorism to constructivism

The Behavioral Learning theory is also called Stimulus-Response theory which holds that basic unit of learning is Conditioned Reflex, and learning completes when stimulus is responded, namely, learning is the link between stimulus and responded. Behaviorist learning theory has significant effect on previous courseware making and is still of significant value in courseware making at present. Courseware making which is guided by The Behavioral Learning theory entails formation of stimulus-response-strengthening learning mechanism between man-machine: providing stimulus to trigger the response by learner and conducting consolidation reinforcement or recession reinforcement.

Information technology as cognitive tool of learning has been integrated into teaching and learning theory has stepped into new stages since the 1990s. Research guided by constructivism learning theory emerges in CAI field. It holds that the process of learning is not that learners are compelled to accept knowledge but that knowledge is actively constructed. It emphasizes focusing on learners and paying attention to autonomous learning by learners. Multimedia coursewares which are made based on constructivism learning theory shall regard helping learners to acquire knowledge as primary purpose to achieve active construction of students' knowledge. Courseware which is made based on ideas focusing on "learning" prompt learners to explore-actively, discover initiatively and learn collaboratively.

2.2 The visualization of knowledge representation

With the advent of picture-reading times, knowledge with graphic representation can describe basic parts of information with detail and turn vague thought to clear external shape to promote propagation, communication and innovation of knowledge.

Appropriate knowledge representation facilitates acquisition and application of knowledge by learners in the making of multimedia courseware. In the field of educational technology (or knowledge visualization), knowledge representation means external represent of knowledge. The corresponding is illustration means with knowledge and stimulus materials which directly stimulate human's sense. ^[1]Under the background of information technology, multielement signals such as texts, figures and animation in multimedia courseware can form the representation of combination of image-text and acoustic image. Multiple representation signals comprehensive stimuli of multiple sense, which helps learners to construct new knowledge based on previous knowledge. Knowledge representation of multimedia courseware supports multiple interactive modes: synchronous interaction and asynchronous interaction, satisfying one-to-one communication and supporting one-to-many and many-to-many communication.

2.3 the thought of integrable ware/groupware

In terms of granularity of multimedia courseware, simple teaching courseware has turned to integrableware and integrableware platform and then to groupware and groupware system ^[2]. Present multimedia courseware inherits features of multimedia courseware: namely, based on some basic materials (such as words, figures, images, animation, audio, video, micro-teaching units of subjects, nominal terms of subjects and graphic symbols of subjects, etc) and courseware makers process and combine these materials into integrableware and integrableware platform.

The above integrableware thought reflects that courseware making gradually amplifies granularity and groupware technology prompts multimedia courseware to transform from single user mode to multi-user mode. Groupware is application software which is aimed at communication, coordination, collaboration and information sharing and supports the need of groupware work. ^[3]Multimedia courseware based on groupware technology allows learners to learn by computers in the manner which is not confined to individualization or classroom and to perform collaborative learning by computers in the manner of group or teams in different places. Groupware combines the capacity of document data, information system and system setting, which makes it possible for us to create collaborative learning system based on network.

2.4 Emphasized the reusability and standardization of resource construction

With the development of network technique, reusability of teaching resources becomes an issue which must be taken into consideration by multimedia courseware making. SCORM standard and XML technique provide forceful support for realizing the objective of complying with standardization principles in terms of courseware making and management and achieving reusability of teaching materials. To perform the reusability of multimedia courseware, courseware designed based on SCORM standard contains several relatively complete and independent learning object, namely, one chapter of one subject can be made a learning object. In the meanwhile, independence of learning objects shall be noticed at time of making to avoid interrelation between learning objects and control coupling degree of learning objects as well as ensure flexibility and reusability of learning objects.

3 New Features of Multimedia Authoring Tools

At present, multimedia authoring tools gradually take on seamless integration and strong usability. In the field of educational technology, the most widely used tool with respect to making of auxiliary courseware is Adobe E-learning Suites^[4] which has become one of the strong tools for supporting courseware making.

3.1 Seamless integration

Integration means multimedia feature which integrates various types of medium information such as text, figure, animation, voice and video to form an organic system after processing. The paper focuses on integration of tools handling with medium information.

General procedures of courseware making contain material processing, integration and issuing (see Fig.1). Adobe E-learning Suites 6 (hereinafter referred to as “Adobe suites”) introduced by Adobe company is used to rapidly establish integration tool box based on HTML5 network learning and learning content of specialized network. All tools in the suites are not independent and strong back-and-forth workflow between all tools can be used to improve making efficiency. For example, users can open Adobe Captivate document in Adobe Audition CS6 to rapidly adjust pitch of voice and align or use Adobe Photoshop Extended CS6 to decorate images and establish 3D images. Local extension pre-made by Adobe Flash Professional CS6 enables users to generate sub-lists. Furthermore, based on Acrobat X Pro, users can embed Adobe Captivate

film to PDF documents and PDF packages, which vivifies learning materials of texts and read completed documents through Adobe Reader. Adobe suites have strong seamless integration.

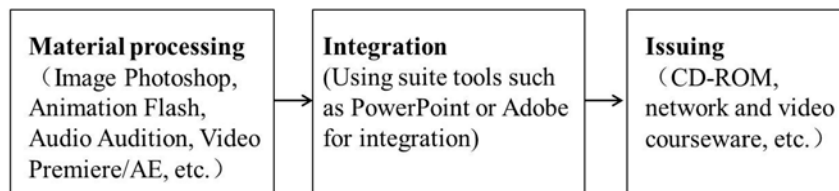


Fig. 1 General Procedure of Courseware Making

3.2 Usability

Usability simply refers to the quality of being easy to use for some purpose. The International Standards Organization defines usability more formally as “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of user” (Usability Professionals’ Association, n.d.). The field of usability engineering recognizes many potential sources of usability problems: between user and tool, user and task, user and other users, and user and environment ^[5].

Adobe suites with strong usability enable professional personnel and educators to make network learning course with strong interaction and in agreement with development of times, including product demonstration, simulation, digital imaging and abundant animation as well as audio making, etc.

In terms of video processing, traditionally we generally use Premiere, After Effects (referred to as AE), etc. Premiere is common video editing software, which facilitates video clipping, adding subtitles or music with few special effects and weak synthesis functions. AE is mainly used for special effect making of videos and can make many delicate special effects. However, the software is easy to cause operation confusion at time of video processing once there are many layers. Therefore, it is not suitable for lengthy motion picture and single synthesis generally shall be no more than 30 seconds. In the meanwhile, this software entail higher configuration of computers, which restricts usability of software. Adobe Presenter 8 allows makers to establish video demonstration directly from desktop without other special equipment. Users can simplify projects and reduce costs of video making and editing with one single desktop solution. Furthermore, it can obtain PowerPoint, dynamic mixing components, audio and video of camera shooting without single video editor. The software reduces background noise and edit and clip videos to facilitate panorama,

varifocal and adjustment of clarity and brightness. Thus the software has strong usability.

4 Multi-platform for Practical Application of Multimedia Courseware

With the development of information technology and advent of mobile internet times, platforms used by practical application of multimedia courseware practice contain traditional demonstration multimedia courseware, network multimedia courseware and burgeoning mobile multimedia courseware.

4.1 Demonstration multimedia courseware

Demonstration multimedia courseware, which integrates text, figure, voice, video and animation and is widely used for classroom teaching, academic report and product demonstration, etc. Making of demonstration courseware reinforces five-step thought of courseware making rising from technology to art, namely, understand software thought, recognize software interface, being familiar with operation procedure, inserting multimedia element (text, figure, image, voice and video....), beautify static courseware (format, color scheme, background, template and slide mastering, etc.), take on dynamic demonstration effects (slide change and customized animation, etc.), set up human-machine interaction/play control (hyperlink and action button) ^[6]. At present most demonstration multimedia courseware use simple and practical Microsoft PowerPoint for making. New features (such as functional orient, processing of figure effect and Smart Art figure (See Fig. 2)) have been added to PowerPoint 2010 and visualization representation of knowledge is highlighted to realize visualization representation of data—information—knowledge—intelligence ^[7]

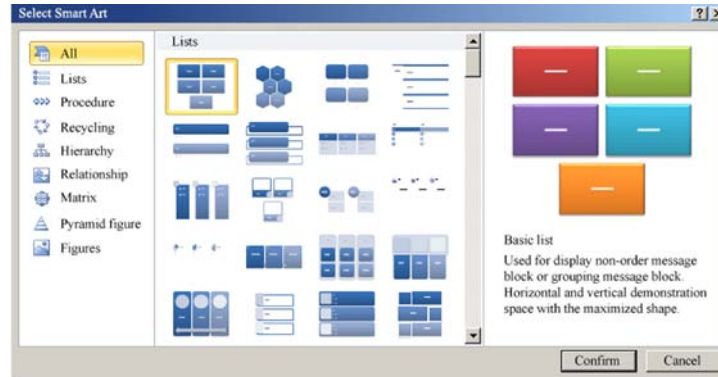


Fig. 2 Smart Art

Although functions of PowerPoint gradually become perfect, many restrictions still exist if it is used to make courseware. For example, relying on words, figures and video related to few contents to spread information; lacking necessary explanation, operation demonstration and video of lecturer at time of demonstration. Courseware documents are free from protection and occupy a large area as well as hard to be spread on internet. Adobe Presenter 8 can break through all restrictions of PowerPoint, utilizes current PowerPoint resources to the fullest and establish multimedia courseware including explanation, video, animation and product demonstration; users can establish exquisite contents without the need of leaving PowerPoint creation environment; courseware after completion of making can be issued with the format of FLASH and PDF to facilitate on-line issuing and spreading sharing face, which has stronger usability than courseware made with PowerPoint. Procedure of rapidly making courseware with Adobe suites is shown in Fig. 3

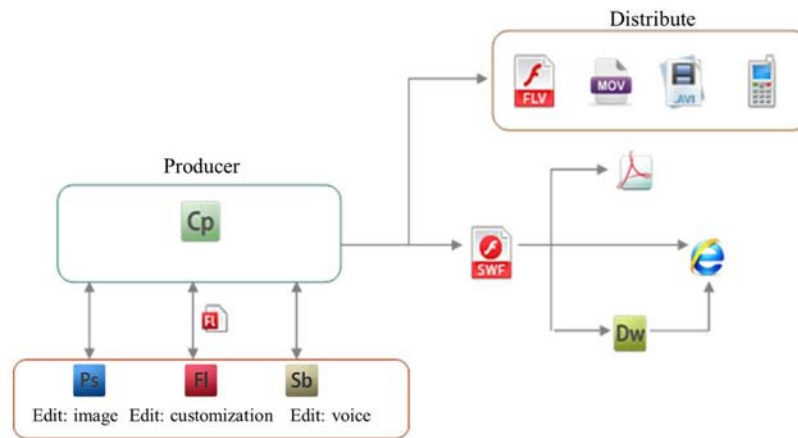


Fig. 3 Procedure of Rapidly Making Courseware

4.2 Network multimedia courseware

4.2.1 Network multimediuization

With the development and plebification of computers, network gradually multimediuizes and brings great convenience to work, study and entertainment of human. The network develops from previous TCP/IP protocol to Web1.0 times of network interaction (such as email and BBS, etc.) dominated by instant messaging based on the manner of B/S; followed by Web2.0 times of interaction between websites, websites and users by virtue of XML, Web Services and AJAX technology and burgeoning Web3.0 times highlighting the maximum unification of network and people. With constant integration of multimedia technology and network technology, teaching courseware can not satisfy demand of learners if it is confined to combination of simple words and figures. Learners tend to use courseware which has strong interaction, abundant contents and automatically controls schedule of course. If the courseware is transplanted to network environment of multimedia, traditional demonstration courseware will be not restricted by weaknesses of small storage medium and high resource consumption of CD-ROM and network multimedia courseware comes into being. Making of network multimedia courseware shall effectively integrate various medium resources containing knowledge of webpage on

the premise of complying with teaching design principle. The making procedure is shown in Fig.4

4.2.2 Personalized learning/ strong interaction

The promotion by cloud technology no longer distinguishes local from the network. Learning mode of learners becomes “3A” learning. That is to say learners can deal with anything related to learning at anytime and anywhere. Learning at this time cares about not only the contents but also individualized and personalized learning. It emphasizes the interaction of multimedia courseware more than ever. Network multimedia courseware is more applicable to the requirements on personalized learning of learners.

According to the “teaching interactive hierarchy tower” theory (Fig. 5), teaching interaction is classified into: operating interaction between student and media interface, information interaction between students and teaching elements, as well as interaction between new concepts and old ones. Operating interaction is the condition and technical guarantee of information interaction and concept interaction. It is an integral

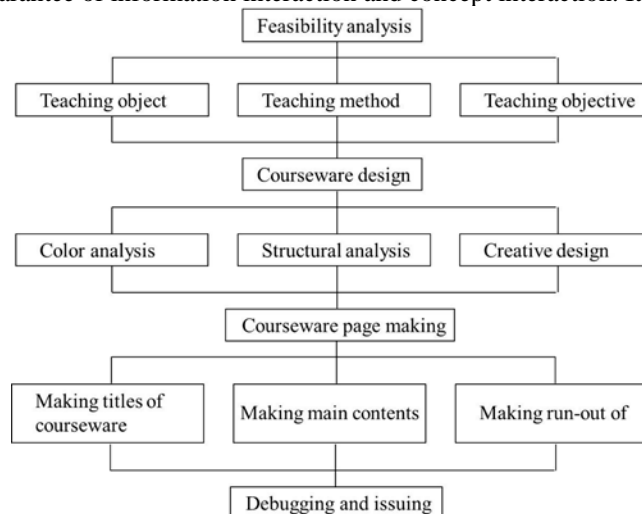


Fig. 4 Making Procedure of Network Medium Courseware

presentation of media interface interaction and proficiency for student to operate the media, also the key point of media design and development^[9]. The sustentative characteristic for network multimedia courseware to differ from presentation courseware is that it provides rich forms of operating interaction. It enables users to

interact with media objects and realize distance interaction between teachers and students.

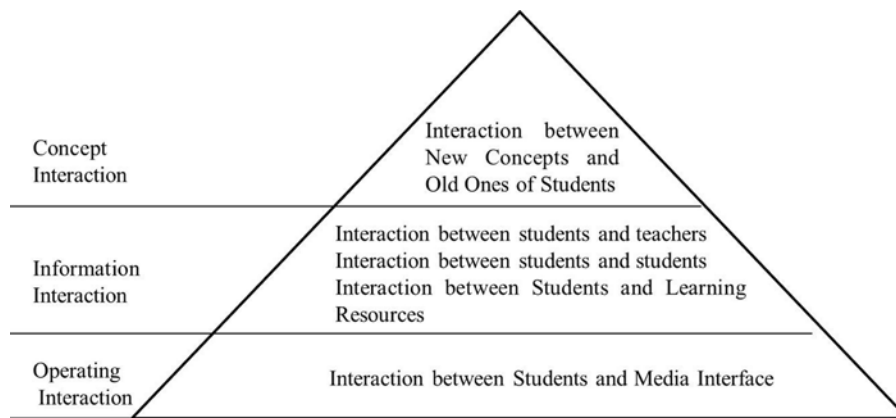


Fig. 5 Model of Teaching Interaction Hierarchy Tower ^[10]

4.2.3 Standardization/ reusability

At present, the main technology used by current preparation of network courseware is HTML5. It strengthens expressive function of website by using HTML5 to prepare network courseware. It has tags specially designed for image and picture processing & video and audio play. In addition, it is added with functions for website application, including intelligent form, designate structural tag (such as header, nav, section, aside, article, footer, etc.), local database, etc. Form elements newly added greatly increase intelligent function of the form. Thus, some function to generally be achieved with writing codes can be realized with directly choosing attribute tag of one form. HTML5 is not only used to present pictures and texts of the website. It aims at, in current times of mobile internet, aligning website standard with development orientation of contemporary websites and leading websites to a mature application platform. On this platform, interactions between flash, audio, video and images and smart phones and computers are standardized.

Adobe Captivate 6 in Adobe suite is capable to prepare teaching courseware in various types. Compared to traditional development technology for network multimedia courseware, the most outstanding feature is the capability to prepare operation-demonstration courseware and exercise-test courseware. Presentations are frequently required in IT courses or others requiring more operations. With Adobe Captivate 6, one is able to record all actions by teachers on computer screen with ease

and high quality. It can be distributed to the website for courseware on demand after being processed. Sounds outside of the computer (such as interpretation voice and operating sound of the teacher) can also be recorded by voice recording equipment in advance. When preparing courseware, import it into Adobe Captivate 6 for processing. With SCORM standard and XML technology, these courseware resources can be repeatedly used. Thus, it is better to promote information technology course teaching, teaching with various types of software, presentation teaching, etc.

In addition, test papers in many types can be designed with ease by Adobe Captivate 6, for example, multiple-choice questions, true-false questions, short answer questions, matching items, gap fillings, etc. (these test papers in various types can be realized in corresponding modules of Adobe Presenter 8). This breaks through the model based on behaviorist learning theory, possessing stronger interaction. When courseware films are recorded in simulating model, Adobe Captivate 6 automatically add interactive scoring and guidance response to judge performance of learners. For example: track the number of trial, right/ wrong, send pass or failed information to learning management system (LMS), etc. Teachers can also choose to provide learners with different feedbacks according to these responses. This not only enables students to familiarize and consolidate the knowledge but also enable teaching and trainers to conduct portfolio assessment: that is to track learning process and academic record of students, analyze learning activities or curriculum teaching, assess teaching objectives, etc.

4.3 Mobile multimedia courseware

Data in Statistic Report on Internet Development in China published by China Internet Network Information Center in July, 2012 showed ^[11] that, by June, 2012, mobile phone users in China have reached 388,000,000, which is more than the number of PC users, so it can be seen that mobile phone has increased to the first Internet terminal. With the development of 3G networks and popularity of intelligent terminals, mobile Internet emerges with substantial innovative applications. Compared to traditional mobile terminal, the most distinction of mobile intelligent terminals lies in its expandability: users are allowed to download and install various apps to expand functions of the terminal, thus greatly increasing practicality and entertainment of the terminal. Nowadays, most mobile apps belong to native apps. These apps are developed by local programming language in platforms of each operating system (for example, local apps of Android are developed by JAVA language), and generally can only be operated on the platform of this system. As the new generation core standard in Internet HTML, HTML5 keeps up with development trend of the Internet.

For mobile learning, more and more users are developing from waiting, seeing, and trial to proposing clear demand. Mobile learning based on mobile phone platform has the features in many aspects: 1. Unlimited access by time and space; very convenient; 2. Learners can do “fragmentation” learning in “fragmented time”; 3. Learning is more personalized. Learners can learn with their needs and interests; 4. Timely communication is allowed. It is ok to express your own ideas or opinions at any time and share them with others.

With the development of information technology and network technology, a new teaching mode is gradually springing up – “double board teaching”. It is the teaching based on tablet PC and electronic whiteboard. Tablet PC is popularized with its rich functions, convenience in carrying, etc. Also, it is a good assistant in learning of students. Learning based on tablet PC is featured with autonomy and universality. It is a favorable tool for online learning. Electronic whiteboard can realize paperless teaching and is featured with strong interaction. It is more suitable to assist teachers in teaching to some extent. Mobile multimedia courseware is applicable to double board teaching and conforms to trend of the era. Currently, double board teaching is rather popular in foreign countries.

For preparation of mobile courseware, Adobe Captivate 6 and Adobe Presenter 8 in Adobe suite are capable to distribute E-learning contents based on HTML5. They can distribute courseware prepared in formats of swf, pdf, etc. and effectively produces mobile multimedia courseware (see Fig. 6), thus pushing more learners to take mobile learning. The learning mode conforms to development trend of current information technology, provides convenience for the learning of learners and achieves the maximum value of limited resources.

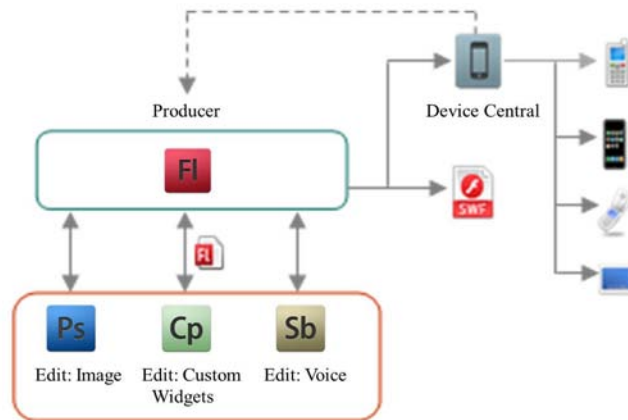


Fig.6 Preparation Flow of Mobile Courseware

5 Conclusions

Today for mobile Internet, preparation of multimedia courseware and courses with high quality means a lot to development of informatization teaching. Adobe suite is developed under this background. With its unique functions and with compliance to new concept for preparation of multimedia courseware, educators can prepare the multimedia courseware to achieve multi-platform practical applications.

However, Adobe suite issued by Adobe Company is still privately-owned by Adobe Company. There is no openness. In addition, this suite takes flash as the core in integration of all kinds of materials. Tool monopoly will go against the competition. Nevertheless, with the development of education, as well as continuous improvement and development in Adobe suite technology in China, I believe Adobe suite will definitely be a useful tool to develop the preparation of multimedia courseware.

References

- [1] Zhao Huichen. Analysis on Form of Visual Representation in Knowledge Visualization [J]. Modern Education Technology, 2012, (2): 21.
- [2] Cheng Jiangang. Design and Practice of Network Teaching Software [R]. Beijing: Education Research Center of Tsinghua University, 2007: 2.
- [3] Huang Xin & Zhao Chengling. Collaborative CAI Courseware Development Based on Groupware Technology [J]. Primary and Middle School Educational Technology, 2004, 12: 45-47.
- [4] Adobe Launches eLearning Suite 6, Presenter 8[OL]. Available at: <http://blogs.adobe.com/ukchannelnews/2012/07/24/adobe-launches-elearning-suite-6-presenter->. February 25th, 2013.
- [5] Alan Januszewski, Michael Molenda, Educational Technology: A Definition with Commentary[M]. Lawrence Erlbaum Associates, part of Taylor & Francis Group LLC, 2008: 145-146.
- [6] Mo Yonghua & Lv Yongfeng. "Five Steps" for Preparation of Multimedia Courseware to Art from Technology – PowerPoint Exemplified. Modern Education Technology, 2008, 18(3): 101-103.
- [7] Mo Yonghua, He Nianquan & Lu lingming. Presentation Is Visualization – Layering Visualization Method Exemplified in PowerPoint 2010 [C]. Xiamen: Press of Xiamen University, 2012.
- [8] Wu Jing. Preparation of Website Multimedia Courseware [J]. Modern Education Technology, 2009, 5(19): 139-141.
- [9][10] Chen Li. Teaching Interactive Model and Hierarchy Tower in Distance Learning [J]. Distance Education in China, 2004, (3): 25-28.
- http://www.cnnic.cn/hlfwzyj/hlwzxbg/hlwtjbg/201301/t20130115_38508.htm. March 1st, 2013
- [11] The 31st *Statistic Report on Internet Development in China* [OL] published by CNNIC. Available at: http://www.cnnic.cn/hlfwzyj/hlwzxbg/hlwtjbg/201301/t20130115_38508.htm. March 1st, 2013