The Realization and Test Research of Standardized Mobile Learning Courseware Based on SCORM

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Abstract: High-tech education is the new trend of the development of modern education. This article attempts to use the modern educational development model to conduct a reasonable attempt of a more scientific and more authoritative new teaching model. The research on the realization and test of standardized mobile learning material based on SCORM is carried out on the continuous Chinese education reform. The article makes a brief analysis on the overall technical framework of SCORM, and points out the specific issues the SCORM has in standardized mobile courseware learning. At the same time, this article studies and analyzes the main produces and steps in the courseware design and development.

1 Introduction

The contemporary society is an economical construction society, with the development of science and technology as its core. The cultivation of talents and the strategy of rejuvenating China through science and education are main direction of national development. Education will help the cultivation of comprehensive quality of talents on the background of social development. Therefore, as for educational development, the reform of educational forms and ways is the main target of scientific educational development. The development of modern technology and the rapid development of internet provide a strong foundation to the continuous reform of educational science. In modern education, diversified talent training model has become a new pattern of educational development, and mobile learning based on online courseware, as a new learning method, is welcomed by the new generation of educated. On the conditions that education has a scientific and multi-directional development, mobile teaching and mobile learning becomes an innovative and scientific form of educational development. Developing this model is in favor of education and teaching take place anytime, anywhere, and is in favor of a comprehensive ideological

education and scientific and cultural education, and promote long-term development of harmonious education and social security. Therefore, the implementation of standardized mobile learning courseware based on the shared content reference model (hereinafter referred to as SCORM) will be a major development trend of education. We should assess the situation, study this kind of education model deeply, scientifically and rationally, so as to help it develop scientifically and create great opportunities for the development of China's education and long-term effectiveness of quality education.

2 The analysis of existing problems in the development of information education

With the modernization of education and the extension of internet, people have a great change of their thinking way and a growing awareness of the information highway. However, under the same conditions of education development, the application of the Internet in the education process needs to be improved. Particularly, in the same educational time,

different regions in China has unequal educational conditions, which makes the Internet plays defective functions under the same conditions of education, and leads to the lagging development of education in most regions in our country.

The arrival of the information technology era marks that the human civilization steps into a new stage of development. Internet plays a very important role in all walks of life and promotes the rapid development of all walks of life. Internet has made great differences in promoting the reform of education. Firstly, it promotes the realization of multimedia teaching. Secondly, it promotes the formation and development of mobile courseware. The development of human civilization has great changes both in time and in space, which promotes the continuous development of knowledge. Advanced and forward-looking as the mobile education mode is, it has a broad development prospect. However, anything in the development process must first go through a difficult and tortuous process, mobile teaching and learning courseware is no exception. It will be confronted with many difficulties under the immature conditions of development.

China's mobile communications equipment applications on the current stage, has reached a comprehensive development trend. Whether it is adult or adolescent, and even child, nearly everyone has a mobile phone. It will lay a solid foundation for the comprehensive development of standardized mobile learning courseware based on SCORM. When we study and develop this education mode, we should take full account of the problems that we will meet in early stage. To be specific, the development of this learning method will be slow in early stage, mainly by the impact of China's traditional education model and the relevant education system constraints, and because of the lack of attention in the social class. Therefore, this learning mode plays only a preliminary auxiliary role in the education development, can only achieve its service but is difficult to achieve its educational leadership role. For example, when it comes to the role of mobile phone in education, teachers seldom consider its application for extracurricular learning, and rarely let students learn courseware through mobile devices. To a large extent the educational resources that would have been devoted to

education is wasted. Although in our education, courseware through internet is designed in multimedia teaching equipment, but the possibility of the realization that courseware is used in multi-platform in the form of SCORM is really low, and even zero in some places. Thus, to achieve the full development, this teaching method still needs a considerable period of development, and needs the support from policy and education systems.

3 The existing problem in the development of SCORM standardized mobile courseware in current network.

3.1 Network courseware sharing resources is relatively lacking, it is difficult to meet the needs of the current education groups

At present, the network courseware is chaotic, quite mixed, the quality of network courseware is different, and the system resources is lack of effective integration. In terms of format and structure, there is also a clear lack of unity. In terms of network sharing, it is difficult to meet the needs of people to share network resources. In terms of network sharing, it is difficult to meet the needs of people to share network resources. Each system document format is different, courseware design form is also very different, and each take the road, there is a chaotic phase of network courseware development. The courseware system and the student information system developed by different organizations are difficult to realize the mutual sharing and the exchange of educational methods, and form their own way of development. This situation is not good for the development and sharing of more resources, thus not good for the application of online resources in education and the development of modernized information education. Even within its own system, courseware content updates are not strong. Even for a long period of time, even if the courseware designers want to update it, they have to go through layers of change, and succeed to update after a long period of time. Throughout the content of educational courseware, most content are electronic design of the paper teaching materials. There are not much education innovation, and the innovation

and development efforts are not strong. In terms of knowledge structure, the content is profound, the universality of the courseware is not obvious, and it is not suitable for the education group with the basic cultural ability. From a number of angles to think, most courseware lack of dialectical teaching practice and play little role on actual teaching. Most of the learning groups are from different social levels. Their ability of learning understanding is different, and thus the level of knowledge they can accept is also different. Therefore, the unsuitable courseware will lead to weariness in the learning process, so that the role of such teaching services greatly reduced, failed to achieve the actual effect of courseware design. For the practical role of teaching, the teaching courseware each school needs is different. For different learners, learning strategies are also easy to lead to different learning effects, and the degree of application of network courseware will produce different results. In a word, the development of online courseware at this stage presents repeated and low level of content, it is difficult to independently form a new system of the scientific development of standardized and automated network courseware.

3.2 The development of network courseware mainly to meet the requirements of today's education system, the majority of the form of development is formalistic.

The online courseware was originated in the United States, developed in the United States, and then continue to spread to the vast majority of the world. The development of network courseware in our country belongs to the development stage of formal requirements, and it is in the initial stage of development in many cases. Many online courseware designers are easy to confuse the online mobile courseware with the traditional multimedia pages, and make it develop in accordance with in accordance with the multimedia web production thinking. This kind of courseware attracts readers mainly by the screen color matching and dynamic color changes to strengthen their learning interests. However, the designers often take little of courseware content, the degree of education, courseware framework, courseware development process and even courseware transfer mode,

so they often neglect them in the process of design. When learners use the shared online courseware to learn, it is difficult for them to know what content they really need in the face of a wide range of content. Because the difficulty to identify the authenticity and effectiveness of the contents of the network courseware, many learners waste a lot of time in the process of blindly learning. Although they really want to learn, but they get half the result with twice the effort. Many online courseware is just a simple combination of some teaching content, its teaching depth and the breadth of digging is not enough. It reduces the learning effect. For example, when learners use online courseware, they cannot check their learning effect as the courseware lack of the systems of learning time, learning page, test scores and so on. Which led to the learners cannot further understand their own learning state, and cannot monitor their own learning process. Besides, this will also lead to teachers cannot know more about students' learning situation in the teaching process, so the process of teaching and learning will be chaotic and the learning effect will be reduced.

3.3 At present, there is not yet a unified technical standard for mobile learning courseware design

At present, China's domestic development of SCORM standardized mobile learning courseware is lagging behind, cannot keep up with the pace of research in the United States, and to a large extent almost copy the traditional model of others, research efforts are surprisingly weak. In term of the education system, due to the lack of attention from the education system, the design of network courseware and the building of research aspects is still in the initial stage of development. In terms of technical processing, it is difficult to form a major technical development force, the development of SCORM in a long period of time is in a semi-stagnant state, and technological development is poor. In the ever-changing wave of network resources, if SCORM standardized mobile learning courseware cannot strengthen itself timely with the technology as its core competitiveness, it will inevitably be forced to withdraw from the stage of historical development. We should find ways to regulate the relevant management system of network courseware technological development to

promote its close integration with the way of education. However, due to the constraints of development and educational thinking, coupled with the impact of China's social development and the development of market economy, the production and design of online courseware cannot adapt to the reality, thereby reducing the efficiency of education. The network space is quite broad, but the design and dissemination of network courseware presents chaotic situation. There are many blind spots in the system, and a standardized management system is not achieved. Technology development, development and research of market are also weak, which is not conducive to the scientific advance of network courseware design and development.

4 Design, development and test research of SCORM standardized mobile courseware

4.1 Design and development of SCORM standardized mobile courseware

The traditional network courseware design and the process of actual operation almost without any control mechanism carried out. SCORM standardized courseware divide the teaching materials into a number of small points of knowledge, make it many learning components with the unit as a small unit. In the SCORM standardized design, the macro framework design of teaching content is achieved according to the curriculum teaching objectives, and the design and planning of the size of each learning element is realized in the micro level. Teaching cases with innovative ideas and teaching values are ported to learning components to achieve a flexible combination of knowledge to facilitate learner use and learning. In the design of the whole courseware, a number of learning elements combine into a set of learning units, and then a number of learning units combine into a learning unit courseware package, so as to facilitate learners in the mobile way to effectively learn.

4.2 The specific design steps of SCORM courseware.

4.2.1 Follow the SCORM concept to standardize the division of curriculum unit. SCO is the most basic courseware unit for courseware editing, and the smallest unit of platform organization and tracking. ①The SCO is composed of one or more materials, and is designed from the chapters of text contents or a variety of knowledge points according to specific conditions and requirements. In addition, its size is not strictly limited. This division meets the "miniaturization, granulation" requirements of the fragmented mobile learning on the courseware knowledge group. However, SCO in the design process requires the inclusion of at least one learning goal that can provide the function of the unit being recorded, since the SCO is a learning resource that enables the SCO to be able to track the granularity of the IMS under the SCORM run-time conditions, thereby SCO can independently divide the context of the content, form a clear individual content and exist in the courseware. Besides, under normal circumstances, the static and dynamic graphic material in the courseware is mostly completed in the traditional way of network education courseware.

4.2.2 Standardize the construction of the metadata file framework refer to SCORM design ideas. SCORM standardized mobile courseware contains nine major categories of metadata, which perform their duties, to achieve the integrated development, and can accurately achieve the rapid processing of data. They can do coordinated work of searching, managing, sharing and reorganizing the information, quickly realize the operation of metadata. However, in many cases, SCORM does not use metadata files. Metadata files only serve to retrieve and provide basic information in many cases in practical applications. In view of this, the rational construction of metadata files is directly related to the effective use value of courseware and contribution to resources sharing.

In the design of SCORM courseware, several metadata making tools are often used, but mainly the reload editor can achieve flexibility and efficiency in use and can describe and save the relevant information in xml file. ②In contrast to the entire courseware, the

order of work for each xml file inside it is orderly, and their order of work is the same. They can work orderly in this high-speed work environment, achieve the rapid transmission of information and provide the basic feasible conditions for modern mobile learning.

4.2.3 Standardize the encapsulation of courseware content refer to the SCORM standard. In the process of design and completion of SCORM standardized mobile learning courseware, the main idea performed in the development and application is the idea of component work. That is to say, a complete course of the network courseware is composed of multiple groups of interactive courseware, and each unit courseware is composed of a plurality of unit courseware packages that can realize the mutual influence, thereby realizing that every layers act in concert with each other and work with interaction. The individual content consists of two parts, which are used to describe the content inventory file IMSMANIFEST.XMI of the learning resource organization structure and the entity file of the learning resource.

4.2.4 Test based on SCORM normalized learning software. Conformance Test is mainly to test whether the production content is consistent with the requirements of SCORM. Regardless of the storm-based courseware and learning management system developed with any tool, you can use ADL's validation tools to test, debug and complete standard verification. ③This test can clearly detect the matching effect of SCORM in the running process, providing reliable data monitoring security for the operation quality of entire network courseware. It will monitor its own quality and improve itself continuously in the work process, which is really helpful for the improvement of its own quality. In the future operation of SCORM, the achievement of the continuous innovation of research methods, will be more dependent on the continuous operation of such tests. Thus, it can be seen that such tests play a very important role in the testing of SCORM standardized learning software.

In addition, the work test is the test that can achieve the multi-effect the network courseware can give modern education and teaching in the mobile environment. It is divided into quantitative testing and job performance testing. But at this stage due to the development of educational facilities and courseware are subject to

different constraints, the effectiveness of testing is not high, and the test is not developed well.

5 Conclusions

In summary, the development of network courseware and its contribution in education, and its rapid update but not enough follow-up changes and inadequate supplement conditions in its operation process, all presents that at this stage SCORM standardized mobile learning courseware has many shortcomings in the development, and need to be improved and improved. In addition, there are fewer successful cases of network teaching applications, its influence is still in the initial stage. Commercial use in public application platform and resource sharing is more serious, which is not conducive to the sharing and rapid dissemination of public education resources.

SCORM contributed a lot to the education industry, it can effectively promote the continuous development of modern education, and promote the continuous advance of network education resources. In the course of modern education and teaching, SCORM has set a brilliant example for network teaching, so that the network education and teaching can develop rapidly. In the process of multimedia teaching, the new situations that courseware developed comprehensively is realized due to the continuous contributions of SCORM. The effect of education and teaching is constantly improving, and the mutual influence and mutual penetration of knowledge at all levels are realized in the educational development platform. In its development process we should continue to stimulate developers and network courseware makers to study and innovate, and constantly tap the potential of the role of SCORM in education, so as to make it contribute more to the modern information education.

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