A COMPARATIVE STUDY OF E-LEARNING SYSTEM FOR SMART EDUCATION

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ABSTRACT

Korean government aims to implement SMART education nationwide, so it is planning many ways to provide digital learning contents. There are some ways of distributing digital contents, and each way has its own characteristics. Edunet is nationwide system for providing educational resource. Cyber Home Learning System is a regional service which offers supplemental learning materials. E-textbook provides electronic textbooks which are actually used at learner's real class. Digital Textbook uses the latest smart device and technology. Each approach has advantages and disadvantages so it need to choose a different spreading method depending on the e-learning environment. And through the modularization of contents, it needs to recycle digital contents.

KEYWORDS

E-learning Contents Distribution, Smart Education

1. INTRODUCTION

Traditionally, the textbook has been regarded as the most important learning material for teachers and students. Because textbook was able to contain letters and pictures, a major representation of knowledge, most of information was spread in the form of a book for a long time. However, there are many ways of knowledge representation and tools for those representations are rapidly updated in this digital era. In recent years, computer technology has been improved rapidly and it affects the learning environment. Because most of the educational materials are becoming computerized, there is a growing need of new distribution system which takes full advantage of these materials in the learning environment.

Republic of Korea is one of the countries which are most interested in the e-learning environment. To implement SMART education nationwide, Korean government is concerned about digital contents distribution. So it steadily tests several methods with various policies and some main distributing services are running nowadays. The purpose of this study is to find common features of e-learning system for SMART education by analyzing characteristics of running services. To achieve the purpose, four services of digital contents distribution are compared and analyzed.

2. BACKGROUND

2.1 SMART Education Development Strategy

Korea is one of the most fast-changing countries, especially in this technical area. This social trend provokes rapid changes in the educational media, learning environments, and teaching-learning methods. To respond to these fast-pace shifts and to nurture the talent needed for the future society, Korean government is attempting to transition to a new educational system, named 'SMART Education'. SMART education aims to get learners participate in their learning process, build their own knowledge, and develop lots of competences for the future society. With the latest technology and pedagogical theories, it is the primary goal to create an ideal environment where learners can learn by themselves.

In SMART education environment, media that learners actually interact affect learning process and result of them; in other words, the way of contacting educational materials can be very important factor, as well as learning contents. From this perspective, Korean government has been interested in contents distribution. The following services show the ways of providing educational contents in the non-face-to-face education.

2.2 Edunet

Edunet is a comprehensive online service system for exchanging educational materials. It was established in 1996, served as a nationwide repository of teaching and learning materials for K-12. Teachers can easily search teaching resources; students can acquire necessary learning materials. Parents and educational administrators can make use of most of data. It also offers basic cyber lectures for K-12 students so those who want additional study can find useful lessons in Edunet. Most of the lectures are interactive lectures produced by the Adobe Flash programs and video lectures.

2.3 Cyber Home Learning System

Whereas Edunet is a nationwide service, cyber home learning system is a supplementary e-learning system for regional primary and secondary students. All metropolitan cities and provinces offer their own cyber home learning system since 2005. Each system focuses on local public education so it offers contents which are closely related to the real school classes. Similar to Edunet, most of the lectures are flash-based interactive lectures and video lectures. It also has personal learning management system (LMS), learning contents management system (LCMS), and many community services for students.

2.4 Digital Textbook

Digital textbook is the generic term that includes recent endeavors to apply a variety of materials in the field of education, especially in public education. Around the world, many countries committed to replace the traditional textbook to learner-centered media, and Korea is one of them. Digital textbook project started in 2007. The concept of digital textbook is an educational material with a combination of textbooks, reference books, workbooks, dictionaries, and multimedia contents such as video clips, animations, and virtual reality. And it offers personal learning management system and variety of external learning materials. The aim of digital textbook is to integrate all possible educational services into it and make it portal of SMART education. Until 2012, digital textbook contents were provided in the form of Windows and Linux program which is optimized for the tablet PC with touch screen. From 2013, digital textbook contents are being reorganized to be accessed by any devices and any operating system.

2.5 E-textbook

E-textbook is a transitional media between textbook and digital textbook. Digital Textbook demands devices equipped with the latest technology and ideal network environment. Although IT infrastructure of South Korea is quite excellent, it is hard to supply every equipment required for digital textbook environment to every student. So e-textbook aims to run on common PC and mobile environment and provide digitalized books which contain same contents as textbook actually used in school. While using e-textbook, teachers and students can get the time to adapt to the digitized textbook environment. Textbook providers produce additional e-textbook with lots of multimedia contents to help students' learning, and they provide e-textbook since autumn of 2012.

3. COMPARISON

3.1 Contents

Table 1 shows the status of contents providing of four services. There are a few things to think in terms of contents.

Textbook is more relevant to students' school work. But e-textbook does not support interactive contents, so it can decrease their interest and motivation. Contemporary educational system needs more participation of learners.

Learners can produce their own contents only in digital textbook environment. In digital textbook platform, students can type answers, draw pictures, capture screen, and save those products at their own cloud storage.

Table 1. Contents comparison

	Contents provider	Interactive contents	Relevance with school work
Edunet	Central government	Flash-based contents	Low
Cyber home learning system	Local education office	Flash-based contents	Average
Digital textbook	Central government	Multi(using touchscreen and sensors)	High
e-textbook	Textbook provider (Local education office)	Not support	High

3.2 Usability

Table 2 shows usability of four services.

All services are run on PC environment, but digital textbook needs tablet PC with touchscreen to use all the features. E-textbook is the only one which can be run on mobile devices (in app style). All service need multimedia and interactive contents, so basic media player and Flash player is required.

Lectures of Edunet and cyber home learning system always need connection to network. Digital textbook is basically download-and-run service, but to take advantage of all the features it has to be connected to network. 'e-textbook' is purely download-and-run service so it does not need network.

Cyber home learning system and digital textbook offer LMS and personalized environment.

Table 2. Usability

	Device	Network Connection	LMS	User contents production
Edunet	PC	Always connected	X	X
Cyber home learning system	PC	Always connected	O	X
Digital textbook	Tablet PC	Frequently connect	O	O
e-textbook	PC, Mobile	X	X	X

4. CONCLUSION AND DISCUSSION

In conclusion, e-leaning system of Korean public education can be divided into two parts. First, there is a system which provides various learning materials to general students. This system offers universal lectures which were produced by the central government and it does not support any personalized service and LMS.

Edunet and e-textbook are included is this system. The second one is for personalized learning, offering LMS and user-created contents management. It provides interactive contents which are based on the real school textbooks and curriculums. This system includes digital textbook and cyber home learning system

Technology is enhancing more and more, but not the entire e-learning environment is perfect. In Korea, a variety of e-learning environment has been built so learners can study in any learning environment. In order to prepare smart learning environment, we would like to make a few suggestions. First, it is necessary to construct the environment in which learners can produce and manage learning outcomes rather than one-side contents providing. Learners are exposed to a variety of learning materials, so it needs to present meaningful and relevant contents to increase the effectiveness of learning. Next, it should be designed to be used in general-purpose devices. Digital textbook has lots of merits and functions, but it needs special devices for using. Nearly all students have at least one smart devices and uses them well, all educational materials are furnished for all smart devices.

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