

A Trend of Educational Information Basis for Higher Education

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Abstract

WebCT that has been used widely in higher educational institutes of North America is going to be a mission critical e-Learning platform in on-campus education, rather than mere WBT system. In this paper, we describe WebCT and its current status in North America at first. Secondly, we introduce three critical trends for educational information basis that we can observe in the movement of WebCT; (1) cooperation with existing student information system, and (2) campus portal that provides university-wide one-stop service for all member of the institution. Finally, we give a general view for educational information basis in Japanese higher educational institutes in 200X. We have already had all of

technologies in our hands that would be necessary for higher educational institutions in the first decade of 21 century. How we can integrate and implement them to use in our own daily education seems to be a critical issue in the expected competitions in higher education.

1. Introduction

Every aspect in our social and private life has been rapidly changing toward highly information-oriented one. This trend can be also seen in higher education and elementary, junior high-school and high-school educations by introducing computer system and network [1]. The Ministry of Education supports the trend by, for example, establishing academic information network and



Figure 1: An example of WebCT course contents (Designer screen). Each function of WebCT is represented by icon.

performing "100 schools project". As the results, educational information infrastructure in higher educational institutions has been continuously established. Besides, the Ministry of Education in Japan has begun to forge changes in the certification of higher education credits due to the globalization of higher education. By being permitted to take up to 60 credits online, a greater number of students may choose to enroll in international online programs [2]. At the same time, current administrative reform will transform 176 national institutions into independent administrative corporations by 2010, thereby encouraging the competition in higher education to get more and better students. These circumstances suggest the arrival of the age of a "big education race" in higher education, and the rapidly growth of the demand to use e-Learning platform actively has been increasing. However, there is no sufficient e-Learning platform in Japan.

On the other hand, the e-Learning platform that has been spreading in North America is WebCT developed by Murray Goldberg of University of British Columbia in Canada. Currently, WebCT has been used in 2,219 institutions of 79 countries [3]. The most important reason to expand the use of WebCT is that WebCT is used in daily on-campus courses rather than distant education. This can be said for Blackboard, which is the second leader of e-Learning platform in North American higher education. Hence, WebCT and Blackboard have been developed as essential e-Learning platform on campus, not just WBT(Web-Based Training) system.

In this paper, we describe the current status of WebCT as e-Learning platform from the viewpoint of Japanese higher education. Besides, we describe (1) our Japanization work of WebCT since 1998 and (2) an example use of WebCT in an actual regular class. Then, we summarize the trends of e-Learning in North America, and introduce an idea of educational information basis that should be implemented in near future.

2. Current Status of WebCT in North America

WebCT[3] developed by University of British Columbia (UBC) is a course management system that facilitates Web-based course design, development and management. Murray W. Goldberg of UBC had started a project to build Web-based course since 1995. He gave a talk about the set of tools developed in the project in WWW5[4]. As the result, the growth of WebCT was started in the world. At the early stage, WebCT had been distributed without any cost. In 1997, he started WebCT Educational Co. to support the development of

WebCT[5](Two years later, WebCT Educational Co. was merged by Universal Learning Technology(ULT) to stabilize the financial and management basis. Now, Murray W. Goldberg is faculty member of UBC, the member of the board of directors, and the president of WebCT Canada. WebCT Inc. and WebCT Canada are located at Boston and the campus of UBC at Vancouver respectively).

WebCT enables not-technical faculty to create Web-based course. Besides, existing course materials such as course notes in PDF and PowerPoint can be easily incorporated in Web-based course contents. Furthermore, the following tools are built-in and selective: discussion board, private mail, maintain and announce tools of student record, course calendar, student homepage, search for course contents, whiteboard, syllabus tool, assignment tool, Web course builder and so on. To easily obtain the global view of course contents, course navigator and course map are available.

2.1 Components of WebCT

The software used in WebCT system is WebCT server and Web browser. WebCT server is implemented using http daemon "apache" and CGI (Common Gateway Interface) written in Perl and C (In WebCT4.0 that will be released at the end of 2001, the CGIs will be rewritten in JSP). WebCT supports Netscape 2.0 or later, and Internet Explorer version 4.0 or later as Web browser used with WebCT server. Since WebCT does not require any other software, the computer platform is widely selective from UNIX, Windows and Macintosh. Note that Java and Javascript settings of Web browser must be enabling.

2.2 The reasons of expanding the use of WebCT

The reasons of expanding the use of WebCT in the world would be the following seven points: (1) the demands of higher educational institutions are reflected in the functionalities of WebCT, (2) WebCT provides good user support, (3) low price of license fee, (4) the install of WebCT and the creation of course contents are free, (5) it is easy for engineer in universities to manage WebCT due to the use of "apache" as the http daemon and the implementation of functionalities using Perl and C CGI, (6) WebCT has a big user community. This provide a common place for WebCT users to exchange their educational experiences using WebCT and discuss about e-Learning (In 1999, the first annual user conference was held at University of British Columbia with about 600 participants, and 78 presentations. In 2000, the second

was held at University of Georgia with about 900 participants, and 132 presentations. In 2001, the third will be held at Vancouver), (7) the course contents of WebCT can be exchanged on e-Learning Hub Center.

2.3 Japanization work of Nagoya University

WebCT has a lot of problems caused by double-byte characters in Japanese environment, which software developed in western countries usually has. Center for information Media Studies, Nagoya University, has been performing Japanization work of WebCT since 1988[6].

However, the current functionalities of WebCT do not reflect the demands from Japanese educational institutions and faculty since WebCT has grown up based on the demands in North America. Education depends on the culture. To seek "Japanese WebCT" in the sense, we have to listen to the demands from Japanese WebCT users, and implement them. This real localization work should be achieved.

2.4 An example of WebCT course

In this subsection, we briefly introduce how to use WebCT in real course/lecture. We have been using WebCT in a computer literacy course for sophomore. We have the regular class in a terminal room of our center, providing our lecture notes using WebCT course content

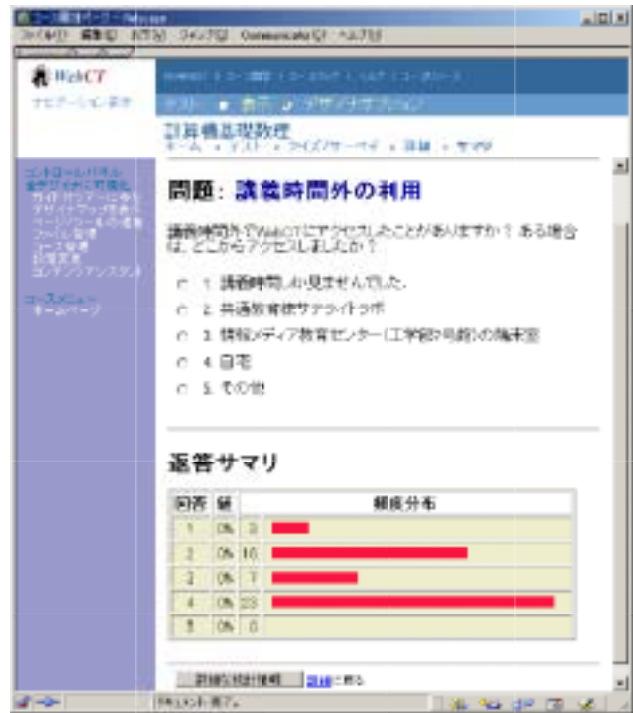


Figure 2: A result of lecture questionnaire using survey tool, asking "where did you usually access WebCT course of this lecture?" The highest score was "from home".

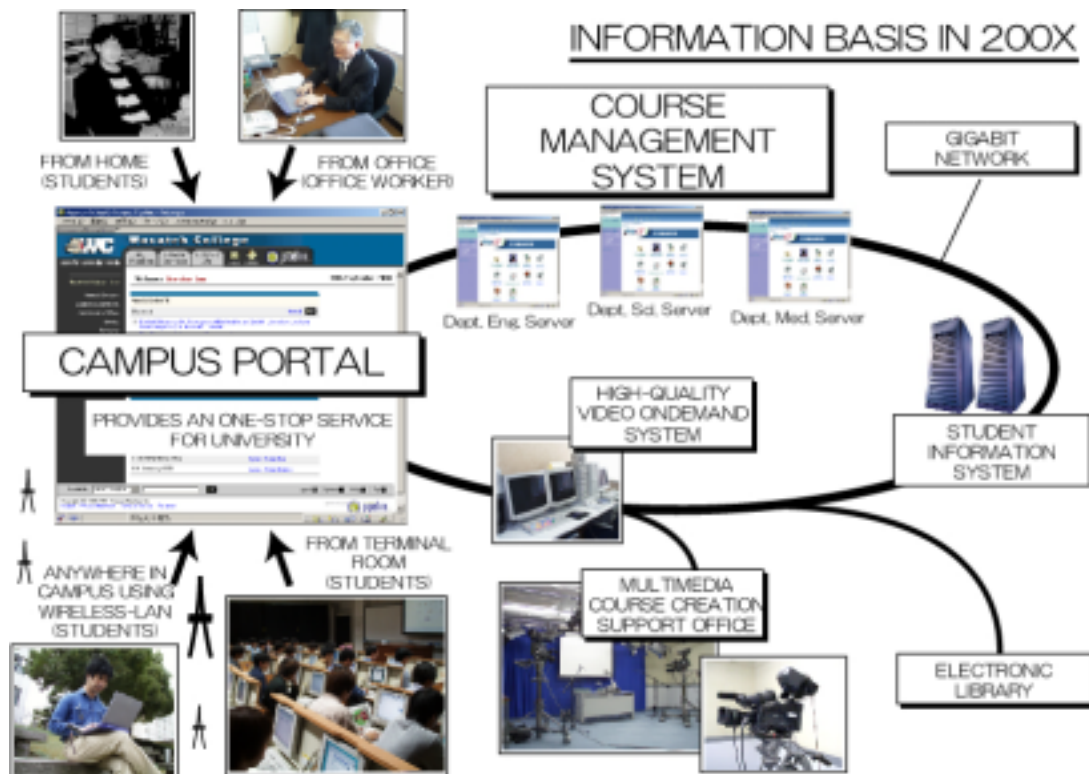


Figure 3: Information basis for higher educational institutions that should be introduced at least in 200X.

module through LCD projector. Students listened to our lecture, reading the same lecture note on their PC's screen with checking references and glossaries. We used WebCT discussion board tool for Q&A of assignments, WebCT presentation tool for showing us their results of assignments, WebCT quiz tool for test, and WebCT survey tool for lecture questionnaire.

Although we have not measured the effect of the use of WebCT accurately, the results of questionnaire indicate the student's activities within class time (see Figure 2).

3. Trends in WebCT Movement

As introduced in the above section, WebCT has been widely used in higher educational institutions in North America. In this section, we describe three important trends that we can see through the movement of WebCT.

3.1 Integration with Student Information System

As described in the first section, WebCT has been used as a supplemental environment for ordinary on-campus lectures. As the result, WebCT has been rapidly integrated with existing student information system on campus. Through this integration, faculty does not require student registration in their course by themselves, and this integration is crucial to expand the use of WebCT on campus.

3.2 Integration with Campus Portal

WebCT Inc. has a partnership with a campus portal vender, CampusPipeline. The integration of WebCT with CampusPipeline indicates that student and instructor can access WebCT through CampusPipeline seamlessly.

Campus portal is a Web site that provides all of information and services related to educational and research activities for all of students, faculty, and graduates. In other words, campus portal provides a university-wide one-stop service. When users log-on the campus portal of their university, they can see not only common information among users but also previously selected channel information in single screen, and from university side, the information depending on the user is also displayed. For example, when a student logs-on, he can see the following information in single screen: schedule and assignments of his lectures registered, student group information that he belongs to, job information, campus news, weather information, traffic information and so on. By introducing campus portal, the

university can provide a gateway to all of information and services for the member of university[7]. Besides, interdisciplinary communities on campus could be formed since campus portal can provide single view for all of member. Note that the Java in Administration Special Interest Group (JA-SIG) has been developing a free campus portal software in North America[7].

4. Information Basis in 200X

As described in the previous section, the important point is that course management system like WebCT and campus portal could be two key systems to integrate all of educational resources, and could be formed next-generation educational information basis for higher education. In such system, the following could be elementary technologies and system (see also Figure 3):

- Campus portal that provides university version of one-stop service
- Course management system integrated with existing educational resources such as student information system and electrical library
- High quality video-on-demand system using MPEG2
- Support staff and system to help faculty creating course contents and multimedia course contents using high quality video
- Giga-bit network to distribute multimedia course contents without any stress
- Broad band connect to the Internet to provide multimedia course contents without any stress
- Wireless LAN to access campus portal anywhere in campus
- Portable PC that is owned by students as their commodity
- Minimum ordinary terminal rooms

4. Summary

In this paper, we reported the current status of WebCT from the viewpoint of Japanese higher education. Also, we reviewed two important trends related to WebCT: (1) integration with student information system, and (2) campus portal.

"From Innovation to Implementation". This is the theme of 1st annual WebCT conference in 1999. We have already had all of technologies in our hands that would be necessary for higher educational institutions in the first decade of 21st century. How we can integrate and implement them to use in our own daily education seems to be a critical issue in the expected competitions in higher education.

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