An Evaluation of Stage One: The Impact of Introducing Web-Based Learning Technologies on Post-Secondary Teaching and Learning Processes

V. MacSwain, D. Mattock, W. Robertson
University of Prince Edward Island
Prince Edward Island Canada

ABSTRACT

This paper describes stage one of the impact on learners, teachers and systems of implementing the WebCT course management tool in two very different post secondary institutions. The University of Prince Edward Island's (UPEI) curricula are based on a very traditional course and program model. Holland College's curricula are based on modules and skills development. The research evaluates how each institution implements WebCT as a curriculum development and delivery tool in which Web components will be selectively employed to give learners more independence and teachers increased options in how to schedule and teach. How both institutions adapt their infrastructures to accommodate WebCT is evaluated.

Background and Origins

Prince Edward Island, Canada's smallest province, is a member of the Maritime Provinces on the Atlantic seaboard of Canada. Its Indian name is Abegweit ("land cradled on the waves"). The highest point on the island is 494 ft (152 m). Its length is 140 miles (224 km) and it is 4 to 40 miles (6 to 64 km) wide. It is connected to the mainland either by bridge (12 minutes) or ferry (75 minutes). It has a population of 137,000.

The University of Prince Edward Island is Prince Edward Island's largest post secondary institution and the only university on the Island. It was founded in 1969 on the tradition of liberal education through a merger of St Dunstan's University and Prince of Wales College, both having origins in the 1800s. It exists to encourage and assist people to acquire the skills, knowledge and understanding necessary for critical and creative thinking, and thus prepare them to contribute to their own betterment and that of society through the development of their potential. It has 2500 full time and 500 part time students.

The University of Prince Edward Island's curriculum is based on the traditional course and program model. Students enroll in a course of study or program, normally a four year Bachelor program in which they complete the required courses. Courses are usually one semester in length and are designated 3 semester hour courses. The University uses a semester system normally fifteen weeks in duration. Semesters run from September to December and January to April. Summer sessions are also available. Students graduate with a Bachelors degree when they complete the required 120 semester hours of credit in their field of study.

Holland College is Prince Edward Island's second largest post secondary institute. It accepts both full-time and part-time students into its programs. The college uses the Competency Based

Education System (CBE) which uses a methodology that emphasizes the specification, learning, evaluation, and demonstration of those competencies which are central to a given occupation, or activity as validated against criteria defined by business or industry (Fraser, 1999). The competency based system emphasizes the how to in a skill and the learners are active participants in the program activities, they learn the skills through hands on learning techniques. The curriculum is based on the occupational analysis approach know as the Develop a Curriculum (DACUM) Model. This model uses a methodology for analyzing an occupational field in terms of its relevant areas of competency and associated skills (Fraser, 1999).

Holland College's curriculum is delivered through the learning managers where the students are the learners and the learning managers are the instructional staff. The students enroll in a program that is typically two years in length and are assigned a learning manager who they work with throughout their two year program on an on-going basis for consulting, course status, and progress reporting. The learners progress through a series of skills and modules. The learners complete the program when they have received the minimum number of required ratings on all the skills that make up their program. The competency level in a particular skill is determined by rating the learners' performance against the performance assessment criteria outlined in the Skills Guide. For this the Industry Standard Rating Scale is used. Using this method of instruction the learners are encouraged to progress and achieve results, discovering their abilities and learning from their experience, as they acquire the skills necessary to enter employment in their chosen fields.

Rationale for Study

In 1997, the University of Prince Edward Island and Holland College received funds through the Knowledge Economy Partnership, an initiative of the Federal and Provincial Governments, to establish an Information Technology in Education Centre (ITEC). Each institution set up its own physical facility and began to incorporate increased uses of information technology (IT) in its teaching and learning processes. The two ITECs are moving closer together in looking for ways they can cooperate in using IT to explore new teaching strategies that have potential for improving learning and/or reaching adults who cannot or are unwilling to participate in existing program delivery options. Staff in both units are aware that there is a reluctance by both teachers and learners to make use of IT either because they perceive it to be difficult to use or they are suspicious of the potential benefits it might bring to both groups. Both institutions are about to increase their use of web-technologies in teaching and have the resources to develop web-based learning materials.

Both institutions are capable of creating and delivering programs using new learning technologies and are also very capable of conducting a study in the impact of those technologies on both teachers and learners who use them. Both institutions have web-based educational projects that begin in 1999 and that are expected to evolve for several years as new ways of using web-technologies, perhaps supplemented with other communications technologies, are explored and evaluated.

Their experience with implementing other forms of learning technologies - audio conferencing, satellite-delivered interactive instructional television, email discussion groups – lead them to a series of assumptions about how learners, teachers and institutions will react to the use of web-based learning technologies:

- specific impact will be unpredictable and adjustments will have to be continuous

- many learners and teachers will be unprepared to make effective use of web-based learning opportunities
- access to web-based learning resources may be difficult for some potential learners and special entry points or resources may have to be provided
- new learning and teaching skills will have to be learned and practiced
- additional learning technologies, such as CD-ROMs, audio or videoconferencing, may have to be used to supplement the core web-based learning technologies to maximize learning or minimize resistance to using new learning technologies
- infrastructure changes in areas such as copyright policy, scheduling, completion dates, assessment policies, learner progression will be inevitable for most institutions

Target Audience

The direct study participants will be:

- UPEI

  Philosophy Program and Business Management Program - 2 groups of up to 25 learners from each program area; minimum of four faculty members

- Holland College

  Business Information Technology Program - 2 groups of 25 learners from two streams of the Program; minimum of 6 instructor/learning managers

Indirect participants will be:

- UPEI

  An additional 30 to 40 faculty in the Faculties of Education, Arts, and Science and the Schools of Business and Nursing who are all part of a web-technology study and interest group that has the objective of making use of some web-based learning technologies in their courses both on and off-campus. Collectively, they have approximately 300-400 learners in their programs.

- Holland College

  An additional 10 plus instructors and about 200 other students in the Program

The study will be carefully monitored to see what it reveals that will assist the two institutions to decide whether or not to move quickly or more deliberately (if at all) in some use of web-based learning technologies. Similarly, universities in the Atlantic region are considering the establishment of a form of cooperative Open University in 2000 that will be dependent on web-based learning technologies for a good part of its curriculum delivery. Decisions on how such an institution would operate and how support would be given to potential users of web-based learning technologies may well be based, in part, on the outcome of the study. Preliminary study on the feasibility of the Open University of the North Atlantic suggest several hundred courses and faculty would be involved within several years and enrolments of the order of 3,000 to 5,000 within five years (Graham, 1998). To make those kinds of financial and intellectual investments, institutions and individuals need more than exhortations and anecdotal evidence to convince them to change their systems and attitudes.

Outside the Atlantic region, any college or university contemplating or reviewing its involvement in web-based learning technologies would be interested in the study results. The Project Committee believed that the issue is not whether or not to use web-based learning technologies but how to introduce them to an institution as smoothly and effectively as possible with the minimum of institutional strife and cost.

Original Project Description

The ITECs of the University of Prince Edward Island and Holland College will each follow two distinctly different types of classes as they introduce web-based learning technologies into their teaching-learning processes. The new course materials were to be developed and be ready for use in September 1999. The study is to be a goal-free evaluation approach for two years, tracking the same groups of learners and teachers through two years levels of using web-based technologies in a variety of courses. Years One and Two will be primarily an evaluation of how the learners and teachers deal with the new technologies. UPEI is primarily an undergraduate institution with a traditional two semester, four-year program. Holland College operates on a two year program cycle and the study group will move through entry to graduation from the College during the study. Two program areas have been selected because of their very different curricula and our ability to follow learners and teachers over a minimum of a two years period. Year Three will be used to do an intensive evaluation of the impact on teachers and their institutions as well as on a "graduate" follow up with learners to see how they were making use of web-based technologies.

Stage One Update

The study was to begin July/August 1999. Due to delays in receiving grant approval, the project committee did not meet until late October. To date it still has not agreed on the research questions and the position of senior researcher has just been advertised. Stage One was to have been completed by January 2000. Therefore the study is behind schedule by four months. There appears to be difficulty in the committee reaching a consensus on the research methodology. Some favor quantitative data others qualitative data. This still needs to be resolved.

Where to Now? What's Happening? Why?

The most foremost question to be addressed is whether or not the Project Committee is "asking the right questions?" The fact that it appears to be having a difficult time in identifying the research questions, as they relate to the project objective may give some insight into what happened during stage one.

Stephen Ehrmann (1997b) reminds us that "asking the right question" is necessary if information technology research is to have any value. He is correct in stating bad questions or generalizations on technical versus 'traditional methods' will not yield valuable insight for the teacher/learner. He also tells us (1997a) for a study to be useful we should evaluate which teaching learning strategies are best and to which technologies are best for supporting those strategies.

Therefore this study's question may be "Are the project objectives clear and achievable?". Will the data reflect the 'real' issues confronting the institutions? Consider the study's objectives and what the data is to identify :

- What distinguishes early and enthusiastic adopters of web-based technologies from hesitant or reluctant users - both learners and teachers? Question: "What is the baseline for what is a hesitant or reluctant user?"

- What adjustments in teaching and learning processes initially chosen by participants and later accepted as good teaching and learning strategies for using web-based technologies. Question: "How does one establish a baseline for good teaching and learning practices?"

- What are the infrastructure changes post-secondary institutions must make to maximize benefits of using web-based technologies to develop and deliver curricula? Question: "What is the baseline for measuring 'maximum' benefits using web-based technologies to develop and deliver curricula?"

- What are the access issues that are both created and reduced or eliminated by using web-based technologies? Question "What is the definition of 'access'?"

- What are the new directions that post-secondary institutions should be taking to use web-based technologies for extending educational services to learners whom are currently not able or willing to participate. Question: "What is the scope and boundaries of extending educational services to non users of the technology?"

All of the above objectives are very open in their scope. It may be that the questions being asked are not being directed to the real issue – that of instructional design. It is as if the technology is being evaluated. Technology in itself is only a tool which may or may not enhance the learning process. Multimedia may offer relief to those students who do not have a print-based learning style but the media is not the learning experience. The questions may need to be changed to have a clearer reflection of the institutions' and learners' needs. Its scope may need to be contained to allow for the collection of data relating to 'real questions' being asked by the institutions.

Phillip Duchastel (1997) cautions us about shoving old models onto the web. He states it is not unusual for academics to use the web as a novel publishing medium for instruction conceived within the traditional university instructional paradigm. He does not see universities using the web as a means to break out of the traditional paradigm of professor-centered university instruction. According to him there are other issues which need to be researched and assessed - evaluation, lack of open-mindness, content-driven courses, communication skills, changed role of printed matter, and roles of professors. If the Project Committee is composed of 'traditional' minded individuals then it may be questionable whether it can separate the tools from the instructional design.

How research questions relate to the teaching-learning requirement is the key. Duchastel (1997) states there are four requirements present in any advanced instructional setting: information, interactivity, structure and communication. These are the requirements, which need to be reviewed. How the tools do, or do not, enhance the learning experience is secondary. It is the instructional design that enhances the individual's learning experience.

Clark and Kozma (1994) state the research questions that need to be asked are:

Ask whether a technology could teach without specifying anything about the teaching methods involved.

All benefits attributed by previous research to "computer" or "video" could be explained by the teaching method they support.

Research should focus on specific teaching-learning methods, not on questions of media.

Where does that leave this study. Well, it is evident that the Project Committee has not clarified in its mind just what is the purpose of the study. It will remain to be seen whether or not the direction of the research will address 'real questions' as identified by the above researchers. The next few months will hold that answer.

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