GUIDELINES FOR CONVERTING EXISTING COURSES INTO WEB-BASED FORMAT

Hakan Tuzun
Indiana University Bloomington

Abstract

This paper reports research in progress. It presents information in the literature on converting traditional courses into Web-Based format. The paper is divided into four parts. The first part makes an introduction to Distance Education (DE) and Web-Based Instruction (WBI) which combines features from both face-toface classroom instruction and DE. The second part discusses current Instructional Design (ID) models for WBI. In the third part, findings from the literature on converting existing courses into Web-based format are discussed. This part includes information in the following categories: How to start the conversion to the WBI, student and instructor support, design issues, interaction among people, and assessment. In the last part, a model proposing an orderly process for converting courses into Web-Based format will be explained.

Introduction

While organizations and schools (K-12, colleges, and universities) have been using the Internet to distribute information for a long time, the implications for the instructional design and delivery of instruction over the Internet have not been sufficiently explored. Many instructors are given the task of converting existing courses into Web-based format. However, since very little has been written on this subject, instructors are left to learn the conversion process by trial and error (Lightfoot, 2000). As a result, instructors might create WBI courses equal to electronic page turning by following the traditional ID models and utilizing old methods of face-to-face delivery. This literature review will unearth the guidelines for converting existing courses into Web-based format. These guidelines will help the practitioners by offering a systematic way for conversion thus eliminating trial and error.

Definitions

In the literature, I came up with such terms as Internet-based training, Internet-based instruction, computer – based distance education, Web-based learning, Web-based distance education, and Web-based instruction. For the sake of simplicity, and to prevent confusion, I will use Web-based instruction (WBI) through the text.

Delivery of Education

Delivery of the education has changed throughout the history. Today, there are two main delivery methods: Face-to-face education and distance education (Shave, 1998).

In the industrial age, formal education system followed the factory metaphor. A campus (factory) was built and the students and teachers (employees and management) arrived at it and worked there (Shave, 1998). In this system, main delivery method for instruction has been face-to-face.

In the traditional face-to-face method the instructor can allocate time for the learners, learners can interact with other learners and with the instructor, and immediate feedback is possible. However, learning should occur at a particular time and place. Besides, interaction between the people in the learning process is difficult outside the classroom.

Distance Education (DE)

DE as a method of delivery of instruction is a promising technology, which can eliminate these problems of face-to-face method. “The term distance learning or distance education refers to the teaching learning arrangement in which the teacher and the learner are separated by geography and time.” (Williams et. al., 1999).

Keegan (1980) characterizes DE with six key elements, one of which is the use of media to link teacher and learner. Different communication and media technologies can provide the link between teacher and learner.

Examples include television, computer transmission, audio or computer conferencing, videocassettes or discs, and correspondence (Heinich et. al., 1999).

In order to describe the media technologies used in DE, "The 4-Square Map of Groupware Options" model developed by Johansen et. al. (1991) provides a convenient way. This model is developed on two basic configurations that teams must overcome as they work: time and place. Based on these configurations, the 4-Square model classifies four types of technologies that support the group process. They are:

- Same time/different place
- Same place/different time
- Same time/same place
- Different time/different place

Web-Based Instruction (WBI)

WBI is a type of technology that is in the different time/different place category. The most valuable asset WBI brings to the DE field is that it allows the flexibility for learning to be occurred at any time and any place (Tipton et. al., 1998). With this flexibility, WBI can offer academic programs to a larger potential audience, which Ehrmann (1990) refers as the New Majority. These people do not have time to a full-time study on campus. For this reason, traditional face-to-face format cannot serve them. WBI may provide instruction to these people at times and places more appropriate to their lifestyles.

Many colleges and universities today are restructuring their existing courses to be offered via the Internet to target the New Majority (see, for example, Bichelmeyer et. al., 2000). As the demand grows, the number of WBI providers will increase. Besides, the number of students who have been using the Internet for communication and research is increasing in vast amounts. For this reason, it might be possible that non New Majority students also may jump to the WBI bandwagon, thus making the market even bigger.

WBI not only provide any time and anywhere delivery of education, but it also does so as effective as faceto-face education. Several researchers conducted experimental studies to compare the student performance of Webbased versus traditional class format (see, for example, Schutte, 2001, and Jones, 1999). They found higher scores for WBI or no significant difference between the two conditions. Besides the effectiveness, some course evaluations showed that WBI courses were appealing to students and students were positive about WBI (see, for example, Friedrich, 1999, and Ingebritsen et. al., 1998).

There are some other advantages of WBI. They are potential to reach a global audience (Duffy, 1992), support for multiple learning styles (Ingebritsen et. al., 1997), lower development and operating costs (Kuchinke et. al., 2001), and being a diverse information resource (McManus, 2001).

We can find disadvantages with every new innovation however and WBI is no exception. Some of the problems listed in the order of most cited are limited bandwidth (McManus, 2001), access to hardware and Internet (Shave, 1998), social isolation (Lichty, 1997), and reliance on learner (Ingebritsen et. al., 1998). Another problem lies in the conversion of delivery of instruction from face-to face to online method.

Instructional Design Model for WBI

The purpose of an Instructional Design (ID) model is "to convey key concepts and processes to be included in a particular approach" (Molenda et. al., 1996). Models tell us the critical success factors to instructional design. To be more specific, an ID model tells us what to do and when to do it, and it barely tells how to do it. Molenda et. al. (1996) point to the importance of an ID model by this example: "…experience leads the expert away from the cookbook and toward improvisation. But for the apprentice chef, the cookbook is the vital link to maintaining quality and consistency from day to day." The ID model is the cookbook that will address these concerns for instructional design.

There seems to be a lack of an ID model and conversion model for WBI. Since the Internet has not been used very long as a means for instruction, currently there are no time -proven models for WBI (Edwards, 1999). What makes this worse is the "misconception that the digital media is able to translate printed matter directly to the screen" (Lichty, 1997). Following this misconception, many instructors and designers have created ineffective WBI courses which do not utilize the opportunities Internet has offered.

Computer mediated communication supports the new paradigm of knowledge-building model for the delivery of learning. Traditional education is based upon a paradigm generally called "knowledge reproduction model." The components of this model are verbal lecture, printed handouts, drill and practice sessions, structured

classroom activities, and office hours (Lightfoot, 2000). In this model, students are seen as passive learners. The purpose of teaching is to transfer static body of knowledge from its source to the student.

According to Imel (1997) the most important distinguishing characteristic of WBI is the emphasis on instruction and not just on information delivery. When information delivery is the basic concern, WBI will resemble computer-based instruction, which has been criticized as being restrained by behaviorist learning theory. WBI should be designed by basing it upon the cognitive-based theories of learning, where learners purposefully interact with the environment, actively participate, thus following the knowledge-building paradigm.

Current ID Models for WBI

Long ago, after the old king died and the prince was crowned, the crowd used to chant, "The King is dead... long live the King" to acknowledge the passing of the old king and the acceptance of the new one. For WBI, the old ID models no longer work. The king is dead. It is time to look at new models of instructional design (Hisey, 2000).

However, when we take a look into the current ID models for WBI identified by Edwards (1999), we witness that the instructional designers lament for the old king. The ID models for WBI used by practitioners resemble the old models. Current WBI models in the literature are Reeves and Reeves' model, Ritchie and Hoffman's model, and Duchastel's model.

Reeves and Reeves WBI model includes ten components for learning on the World Wide Web (WWW) called dimensions. These dimensions are (1) pedagogical philosophy, (2) learning theory, (3) goal orientation, (4) task orientation, (5) source of motivation, (6) teacher role, (7) metacognitive support, (8) collaborative learning (9) cultural sensitivity and (10) structural flexibility (Edwards, 1999).

Ritchie and Hoffman's WBI model adapts traditional instructional design principles into WBI. These are: motivating the learner, explaining what is to be learned, helping the learner recall previous knowledge, providing instructional material, providing guidance and feedback, testing comprehension, and providing enrichment or remediation (Edwards, 1999). In this form, this model resembles Gagne's nine events of instruction.

Duchastel's WBI model (Duchastel, 1996) proposes innovative changes to the traditional instruction model. He defines several functions in his model for WBI. He contrasts these functions with the traditional ones found in traditional teaching. These functions are specifying the goals to be pursued by learners instead of specifying content to be learned, evaluating learners at the task level instead of relying on standard testing, having learners study and work cooperatively and collaboratively instead of studying alone, producing knowledge rather than communicating it, and creating global learning communities instead of restricting programs to local interactions.

Edwards (1999) identified five recurring themes common between these three models. They are need for clear goals, including collaborative learning teams, incorporating motivational aspects into WBI, turning instructors into facilitators who provide guidance and feedback, and facilitating the production of knowledge and the development of skills in WBI.

He also developed a model for WBI based on these themes. He aimed his model specifically for higher education and adult learners, but he also added that elements of this model could be applied to any type of WBI. The basic foundations of Edward's WBI model are goal-oriented, motivational provisions, student-centered, guidance/feedback provisions, collaborative learning strategies, and project-based.

It is difficult to state that the models identified by Reeves and Reeves, Ritchie and Hoffman, Duchastel, and Edwards are design models. Their ideas include useful elements which make up successful WBI courses, but the claimed models do not tell us what to do and when to do it during the design of WBI. Therefore, there is a need for a more robust ID model for WBI.

Findings from the Literature on the Current Practices in WBI

I will summarize the practices of WBI from the literature under the following categories: How to start the conversion to the WBI, student and instructor support, design issues, interaction among people, and assessment. I found these categories by blending existing model components and by putting together common practices followed by the practitioners.

Imagine yourself driving without a road map in a remote area, which you have never been before. How would you find your way to your target? One approach would be trial and error. You could take a highway exit you strongly believe will bring you to your target. Or, you could stop by at a gas station and ask to the clerk. Whatever approach would be taken, finding your target without a map would cause you to lose valuable time and resources.

Instructional designers and instructors trying to convert their courses into WBI format without a time - proven solid model are similar to those drivers trying to find their target in a remote area without a road map. Practitioners follow several approaches in the conversion process.
Practitioners usually tend to start the conversion of instruction to Web-based format by prototyping the WBI at informational level (Lightfoot, 2000). To restate it another way, designers usually develop a site first as a supplement to the in-class course. Shave (1998) proposes four levels to use the Internet as part of a course. They are:

- **Informational (Level 1)** in which the Internet is used to provide information to students that is relevant to the administration of the class. Example information items are timetables, syllabi, and class notices.
- **Supplementary (Level 2)** in which additional resources are provided for students. Resources may include additional references and useful hints.
- **Dependent (Level 3)** in which the major components of the course are on the Internet and students need to access these as part of the course.
- **Fully On-line (Level 4)** in which the entire course and activities are on the Internet.

Friedrich et. al. (1999) go on to say that even a simple online syllabus can be advantageous for both the instructor and the student in the conversion process. These authors developed a Web site, which supplemented their graduate course in statistics and measurement. What included on this site were course syllabus, course procedures and policies, course schedule, individual units, and resources. Shotsberger (1996) surveyed existing efforts at using WWW for instructional purposes and found that most existing sites were intended as an adjunct to the classroom.

Modeling the existing Web-based courses is another start point for conversion. Modeling helps to overcome limited time and limited experience problems. Friedrich et. al. (1999) derived the basic site structure for their WBI from existing Web courses that they browsed. Ingebritsen et. al. (1998) modeled their online lectures after a face-to-face lecture experience.

Student and instructor support is an important component in WBI. Duffy (1992) states that a WBI program will not function without proper support. Student support may be in the form of an orientation. Instructor support may be provided by offering technology training to the faculty, and by creating ID teams and technical support teams.

When I started studying at Indiana University, I got an orientation from the university, from the Instructional Systems Technology (IST) department, from the education library, and etc. These orientations introduced me to the environment, to the resources, and to the important things I needed to know to be successful in my program. WBI is a new learning environment for many students and such an orientation will not only be an icebreaker to the learner but it will also show deficiencies in the WBI to the designers before actually it starts.

Kuchinke et. al. (2001) stated that eliminating as many technological barriers as possible before the beginning of the actual WBI is critical to a successful start. To do this, they offered an online tutorial and practice sessions two weeks prior to the first course in their WBI. Their tutorial included such components as practice sessions and assignments. The tutorial helped the students become proficient with all hardware and software requirements before beginning of the course. Friedrich et. al. (1999) recommends that universities must support the students and train them for online courses. This training shall be in the form of a workshop including such topics as how to take an online course, how online courses are different from classroom based courses, what skills are needed to be good online students, and etc.

A lot of studies mentioned lack of instructor experience in WBI as a problem (see, for example, Lightfoot, 2000, and Friedrich, 1999). Some authors recommended creating a permanent instructional design team and technical support team to overcome this problem (see, for example, Ingebritsen et. al., 1997, and Kuchinke et. al., 2001). These teams would consist of instructional designers/developers, and technical support staff who will act as consultants to the instructors. This consultation may be in the form of offering advice for interactivity and group activities, assisting the instructor with creation of instructional materials, providing technology resources, providing technical assistance and training, and providing troubleshooting. Teams might be located at a resource center. The resource center might also be used for placing the equipment necessary for creating and delivering instructional materials. Ingebritsen et. al. (1997) utilized such a resource center while they delivered their online course. The center they used included equipment such as various Web servers and Web authoring computer terminals, and staff such as technology specialists and undergraduate students. Kuchinke et. al. (2001) received technical assistance from a technical support team consisted of six half-time staff with expertise in Web design and development.

I will categorize design issues under three categories: Web site structure, design principles, and formative evaluation.

Lightfoot (2000) proposes that overall Web site structure should be organized into a Web tree that is wide rather than deep. Making sites that are wide prevents user from getting lost and spending excessive time looking for things. The components Lightfoot (2000) planned to include in his Web site are announcements, syllabus, course handouts, lecture notes, assignments, grades testing, and student support. He puts all these components as secondlevel pages under course homepage. He further goes to the third-level and defines these categories under student support: bug reports, suggestions, Frequently Asked Questions (FAQ), student discussion, text search, and other useful links. Lightfoot concludes that his imple mentation didn't match this plan, and it differed. What Friedrich et. al. (1999) added to these components in his WBI site are course objectives, course schedule, technical requirements and "about this site" pages.

Authors seemed to follow a common agreement concerning design principles. Lightfoot (2000) indicated that Web pages in WBI should be visually appealing, consistent, and attractive. Shotsberger (1996) added simplicity to these.

Formative evaluation is seen as an often-used method in many WBI cases to modify the design. Lightfoot (2000) viewed his WBI as a prototype and made additions to and subtractions from his initial design thus continuously evaluating it. Tipton et. al. (1998) conducted formative evaluation with students following each of the design, development, and implementation of their WBI. Changes were made to correct minor deficiencies during the formative evaluation. Friedrich et. al. (1999) indicated that optimal Web design will result from fine-tuning and several iterations of initial design.

Using synchronous and asynchronous tools is very common to provide interaction between the instructor and students and among students. Asynchronous tools used in various WBI cases include such tools as lectures (Shotsberger, 1996), e-mail messages (Lichty, 1997, and Ingebritsen et. al., 1997), and threaded discussion forums (Lichty, 1997, and Kuchinke et. al. 2001)

The most popular synchronous tool used in various WBI cases is the chat function (see, for example, Ingebritsen, 1998, and Kuchinke et. al. 2001).

When assessment is the case, some WBI cases utilized traditional tests and quizzes as a form of assessment (see, for example, Ingebritsen et. al., 1997, and Lightfoot, 2000). However, Friedrich et. al. (1999) indicated that student assessment in a Web-based course should be different from traditional techniques. They evaluated student achievement in their statistics and measurement WBI course with such authentic tasks as written reports and test construction. Kuchinke et. al. (2001) made a similar conclusion and indicated that assessment in WBI should be in performance-based mode and it should include fewer objective tests. Some authors indicated that immediate, frequent, and specific feedback is essential to provide accurate information regarding student performance (Friedrich et. al., 1999, Tipton et. al., 1998, and Kuchinke et. al., 2001).

Proposed Design Model

In this part, a model proposing an orderly process for converting courses into Web-Based format will be explained. Design models can be built in two ways; conceptually, and empirically. The following model is a combination of the information presented in the literature on this topic and the author's previous experience with WBI design. Therefore, it is a model containing conceptual and empirical elements. The model is categorized in 9 phases.

It is recommended that people using the model go phase 1 through phase 9. However, different steps might be taken in each of the phases. In addition, you do not need to implement each of the steps in the phases. For example, if you do not plan to use audio and video components in your course, you may not need to provide a facility for recording, digitizing, and editing audio and video files. Therefore, you may skip step 4.3.

Instructional Systems Technology (IST) department at Indiana University has started a three-year Master's Program to give working professionals an opportunity to get an M.S. degree in instructional systems technology field. As part of this initiative, residential courses in the IST program have been converted into WBI format. R511 'Instructional Technology Foundations I' was such a core course to be converted from residential format to WBI format. The purpose of this course is to provide an introduction to the field and profession of instructional technology. The author of this paper used the guidelines offered in the proposed design model with success with a design team to convert this course into WBI format. Therefore, the model has been used in a higher education setting for converting a course that aimed to teach concepts and knowledge. However, the model can also be utilized in other settings and learning domains.

Phase 1 - Pre WBI Efforts.

1. Infuse the technology into the course prior to WBI. This may be in the form of word processing use, spreadsheet use, e-mail use, Web use, and etc.
   1.1. In doing so, go from level 1 (informational) to level 4 (fully on-line). Designers and instructors should develop a site first as a supplement to the in-class course, in which they provide information to students that are relevant to the administration of the class. Then they should go to level 2 (supplementary level) and level 3 (dependent). After completing these stages, they should implement the fully on-line level (level 4). Following these stages will allow the parts to be implemented in chunks. In this way, the transition will be easier and lower levels will provide a base. Besides, instructors and designers will get more experience as the levels increase and they will have knowledge about potential problems and their solutions.
2. Mirror closely the content, structure and requirements of the traditional program. There must be equity between on-site course and WBI course in terms of academic rigor.
3. Model the existing Web-based courses on the Internet. The existing Web-based courses may provide the designers ideas on this issue.
4. For departmental programs (such as a master's degree program), start with core courses and add other courses by time. For this purpose, survey the faculty and ask the following two questions:
   4.1. What courses have the potential to convert to a WBI course? Some courses may not be effectively delivered via the web.
   4.2. What methods could best be used to deliver the course?

Phase 2 - Create a resource center to support on-line course development efforts.

1. Create a permanent technical support / technical assistance team. The purposes of this team would be:
   1.1. To ensure that all the technology is in place and working properly,
   1.2. To troubleshoot and provide technical assistance during course delivery,
   1.3. To identify problems and suggest solutions,
   1.4. To maintain network,
   1.5. To upgrade hardware and software,
   1.6. To implement web design and development efforts.
2. Create a permanent instructional design team. The design team might include two sub-teams:
   2.1. One group might focus on analysis & design.
   2.2. The other group might focus on development & production.
3. Provide technology training. The technology used must be transparent to both faculty and students during the implementation of WBI.
   3.1. Provide student training.
      3.1.1. Provide on-campus workshops.
      3.1.2. Provide Web-based workshops.
   3.2. Provide faculty training. Faculty should not be distracted by the technology used in the delivery process. Their task should be addressing curriculum issues instead.
      3.2.1. Provide on-campus workshops.
      3.2.2. Provide Web-based workshops.
4. Provide technology resources.
   4.1. Provide software technology. The following types of software technologies might be provided:
      4.1.1. Server software
         4.1.1.1. Web server
         4.1.1.2. Real media server
         4.1.1.3. FTP server
         4.1.1.4. Other server software
      4.1.2. Office applications
         4.1.2.1. Word processing software
         4.1.2.2. Spreadsheet software
         4.1.2.3. Database software
      4.1.3. Web design software
      4.1.4. Graphics software
   4.2. Provide hardware technology. The following types of hardware technologies might be provided:
      4.2.1. Servers
      4.2.2. Web authoring stations

   4.3. Provide facility for recording, digitizing, and editing audio and video files.

Phase 3 - Make an analysis. The analysis could be implemented by surveying the potential or registered students.

1. Identify requirements. Complete disclosure of requirements will help potential students make an informed decision about whether this type of learning environment is appropriate for them.
    1.1. Identify requirements for Information Technology (IT).
2. Make a learner analysis. Possible data sources are learner introductions or self-reports done for prior courses, learner preferences expressed in prior course evaluations, and instructors' impressions of the salient characteristics of the course.
    2.1. Make an analysis of technology learners possess.
        2.1.1. Analyze learners' hardware configuration.
            2.1.1.1. Memory size
            2.1.1.2. Processor speed
            2.1.1.3. Sound card availability
            2.1.1.4. Speaker availability
            2.1.1.5. CD-ROM drive availability
            2.1.1.6. CD-Burner Availability
        2.1.2. Analyze learners' software availability.
            2.1.2.1. Browsers
            2.1.2.2. Browser plug-ins
            2.1.2.3. Utilities
            2.1.2.4. Office applications
                2.1.2.4.1. Word processing software
                2.1.2.4.2. Spreadsheet software
                2.1.2.4.3. Database software
                2.1.2.4.4. Statistics software
        2.1.3. Analyze learners' Internet access.
            2.1.3.1. Connection speed
    2.2. Make an analysis of the venues learners learn.
        2.2.1. Home
        2.2.2. Workplace
        2.2.3. School
    2.3. Make an analysis of previous experience learners have with Information Technology (IT).
        2.3.1. Word processing experience
        2.3.2. E-mail experience
        2.3.3. Internet experience
        2.3.4. Videoconferencing experience
        2.3.5. Level of confidence for using IT
3. Analyze recommendations made by the stakeholders (designers, instructors, administrators, and etc.) of previous WBI courses offered in the institution (i.e., at the department, at the university, and etc.)
4. Analyze the course being converted.
    4.1. Analyze previous years' student evaluation data (if available) of the on-site course.
    4.2. Obtain a description of the previous content and approach used in the residential version of the course (The easiest way is to obtain the course syllabus).
5. Analyze the existing course management software (i.e., SiteScape, WebCT, BlackBoard, Oncourse, and etc.) and select the most appropriate one aligned with course content, and course activities.
6. Decide on pedagogy (Problem based, group work, and etc.).

Phase 4 - Identify instructional strategies. Provide students ways in which they can practice the knowledge from WBI course in meaningful ways.

1. Make the student an active participant in the learning process.
    1.1. Follow a student-centered model instead of teacher-centered model.
    1.2. Put the instructor as the mentor/supporter in the WBI model.
    1.3. Provide collaborative learning options to overcome isolation in distance learning.
        1.3.1. Provide interactivity using different forms
        1.3.2. Use multiple sources of information
            1.3.2.1. Develop partnerships to share resources.
            1.3.2.2. Provide access to authentic research databases.
            1.3.2.3. Provide access to educational resources from other colleges or universities.

1.4. Utilize multiple lines of communication among participants.
    1.4.1. Allow synchronous communication between remote parties. The following Internet tools might be used for this purpose:
        1.4.1.1. Chat tools
        1.4.1.2. Instant messaging tools
        1.4.1.3. Audio conferencing tools
        1.4.1.4. Video conferencing tools
    1.4.2. Allow asynchronous communication between remo te parties. The following Internet tools might be used for this purpose:
        1.4.2.1. e-mail
        1.4.2.2. Threaded discussion groups
1.5. Foster interaction and collaboration among students.
1.6. Allow students build informal networks for supporting each other professionally and personally. The following tools might be used for this purpose:
    1.6.1. Electronic café
    1.6.2. Phone

2. Support multiple learning styles.
    2.1. Allow students learn by seeing and hearing information.
    2.2. Allow students learn by doing active learning assignments.
    2.3. Allow students learn by reading material.
3. Provide problem-solving activities.

Phase 5 - Provide a well planned administrative structure. This structure should facilitate the communications and exchange between the university, the department and distance student. Although WBI students contact with the institution less frequent than conventional instruction, the interaction is more meaningful.

1. Provide secretarial personnel.
2. Provide clerical personnel.
3. Provide para-professional personnel.

Phase 6 - Design and develop the WBI.

1. Design team members should have a shared vision of how this conversion project has to come together.
2. Organize the development efforts with the following labels:
    2.1. Content Materials (the resources provided by the client)
    2.2. Instructional design documentation (the instructional units developed by the development team)
    2.3. Interface design documentation (templates, web site mock ups, sketches)
    2.4. Multimedia resources (multimedia components of the course and graphics)
    2.5. Sample documentation (examples of navigation and ID documentation from previous WBI courses)
    2.6. Project management documentation (production plans, roles, interim reports)
3. Organize the design and development team around the following roles:
    3.1. Project manager
    3.2. Technology manager
    3.3. Documentation manager
    3.4. Content manager
    3.5. Regular member
4. Meet periodically with the client to make major decisions and to update them on the design progress.
5. Prepare a general template and use it for each of the course modules/weeks/structure.
6. Balance the residential content of the course by reducing/adding the content.
7. Include the following components on the WBI web site:
    7.1. A homepage
    7.2. A detailed course syllabus
    7.3. Expectations from students
    7.4. Deadlines
    7.5. Grading criteria
    7.6. Course objectives
    7.7. Course procedures and policies
    7.8. Course schedule
    7.9. Links to course content
    7.10. Resources

8. Supplement course content with multimedia components.
9. Be consistent throughout the web site in terms of format (i.e., same PowerPoint format) and phrasing.
10. Provide documentation to the course instructor.

Phase 7 - Eliminate technological barriers as much as possible before the beginning of the actual WBI course.

1. Support and train the students for online courses. In traditional classroom instruction, students are ready to participate in the course. However, learning in a WBI course requires a set of skills, knowledge and abilities some students are not prepared for. Preparation for both technical aspects and for the distance-learning mode is necessary. In this sense, the following should be implemented:
    1.1. Provide students an orientation period (online tutorial and practice sessions) before the actual beginning of the class. These sessions will help students become familiar with the tools and techniques of online learning before the beginning of the WBI course.
    1.2. Provide students a basic computer literacy course. The following topics might be covered in this course:
        1.2.1. Multimedia software
        1.2.2. Web authoring software
        1.2.3. Conferencing tools
        1.2.4. Sending e-mail
2. Support and train the instructors.

Phase 8 - Assess the students.

1. Put emphasis on application rather than content acquisition during the assessment. Assess the student achievement with authentic assessment tasks. These authentic assessment tasks might be:
    1.1. Deliverable driven
    1.2. Discussion driven
    1.3. Presentation driven
2. Provide formative evaluation techniques.
    2.1. Utilize short answer quizzes.
3. Provide summative evaluation techniques. In doing so, use fewer objective tests than traditional settings.
    3.1. If you utilize traditional assessment techniques, allow learners to use a cheat sheet to curtail academic dishonesty.
4. Provide grades with password protection so that students can access only to their own grades.
5. Provide timely feedback on all kinds of assignments.

Phase 9 - Evaluate the WBI.

1. Provide ongoing formative evaluation. Keep the features that are deemed useful, eliminate others or modify them.
    1.1. Maintain the web site regularly.
    1.2. Eliminate the bugs.
    1.3. Proofread and revise the site content. Look for typos, punctuation and capitalization problems, grammatical errors, and content that seems out of plan.
    1.4. Satisfy with the short-term results and use the initial feedback to continue with the development of the WBI.
    1.5. Survey students regarding their perceptions of the WBI. For this purpose, use a method that allows students to make anonymous comments on the class while the WBI is underway.
    1.6. Test the site across different browsers and computer platforms (Windows and Mac).
2. Calculate potential savings by converting the courses to WBI mode, and Return on Investment (ROI). Effective WBI courses require the allocation of a variety of resources. These resources make up the overall cost of the WBI course. In return, the institution expects benefits as the result of the investment. If benefits exceed costs, the WBI course can be considered as a viable academic alternative.

Conclusion

This literature review showed that without a time-proven WBI model, practitioners have been trying to convert existing courses into Web-based format. Since they do not follow a common model, there seems to be an inconsistency in the approach taken. Everybody is trying to do something, but they are losing valuable time and resources. There is an absolute need for a solid model for both WBI and conversion of instruction to Web-based format.

Although practitioners did not follow a common model, their conversion of instruction to Web-based format included some common categories such as how to start the conversion, how student and instructor support should be, design issues, how interaction among people should be, and how assessment should be. Examples for each of these categories were given.

There are more to issues to cover in this study such as collaboration, administration, and other situationalities. However, limited space and time does not permit to cover all of them. Since this is a research in progress such issues will be extended in the future.

References

Bichelmeyer, B., Misanchuk, M., & Malopinsky, L. (2000). Adapting a Masters Course to the Web: Principles, Strategies, and Recommendations. Paper presented at AECT Conference, Denver, CO.

Duchastel, P. (1996). A Web-Based Model for University Instruction. Journal of Educational Technology Systems 25(3): 221-28.

Duffy, J.C. (1992). Planning for Computer-Based Distance Education: A Review of Administrative Issues. ERIC Document: ED387169.

Edwards, C. (1999). Models for Web-Based Instruction: A discussion of recurring themes. Paper presented at AECT Conference, Houston, TX.

Ehrmann, S.C. (1990). Reaching Students, Reaching Resources: Using Technologies To Open the College**.** ERIC Document: ED327171.

Friedrich, K.R., & Armer, L. (1999). The Instructional and Technological Challenges of a Web Based Course in Educational Statistics and Measurement**.** ERIC Document: ED432262.

Heinich, R., Molenda, M., Russell, J., & Smaldino, S. (1999). Instructional Media and Technologies for Learning (6th ed.). Columbus, OH: Prentice-Hall.

Hisey, V. (2000). The New Media Instructional Design Symposium 2000 Introduction [On-line]. Available: http://www.influent.com/nmid2000/

Imel, S. (1997). Web-Based Training: Trends and Issues Alerts. ERIC Document: ED414446.

Ingebritsen, T.S., Brown, G.G., & Pleasants, J.M. (1997). Teaching Biology on the Internet**.** ERIC Document: ED429536.

Ingebritsen, T.S., & Flickinger, K. (1998). Development and Assessment of Web Courses That Use Streaming Audio and Video Technologies**.** ERIC Document: ED422859.

Johansen, R., Martin, A., Mittman, R., & Saffo, P. (1991). Leading Business Teams: How Teams Can Use Technology and Group Process Tools to Enhance Performance. Reading, MA: Addison-Wesley.

Jones, E.R. (1999). A Comparison of an All Web-Based Class to a Traditional Class**.** ERIC Document: ED432286.

Keegan, D.J. (1980). On Defining Distance Education. Distance Education 1(1): 13-36.

Kuchinke, P.K., Aragon, S., Bartlett, K., (2001). Online Instructional Delivery: Lessons From the Instructor's Perspective. Performance Improvement. 40(1). 19-27.

Lichty, P. (1997). Information, Institutions, Society and the New Media**.** ERIC Document: ED409591.

Lightfoot, J.M., (2000). Designing and Implementing a "Full-Service" Classpage on the Internet. Journal of Educational Multimedia and Hypermedia. 9(1). 19-33.

McManus, T.F. (2001). Delivering instruction on the World Wide Web [On-line]. Available: http://www.csuhayward.edu/ics/htmls/Inst.html

Molenda, M., Pershing, J.A., et al. (1996). Designing Instructional Systems. The ASTD Training and Development Handbook. R. Craig. New York, McGraw-Hill.

Schutte, J.G. (2001). Virtual Teaching in Higher Education: The New Intellectual Superhighway or Just Another Traffic Jam? [On-line]. Available: http://www.csun.edu/sociology/virexp.htm

Shave, C. (1998). So You Want to Deliver a Course Using the Internet! [On-line]. Paper presented at TCC Conference, Honolulu, HI. Available: http://leahi.kcc.hawaii.edu/org/tcon98/paper/shave.html

Shotsberger, P.G. (1996). Instructional Uses of the World Wide Web: Exemplars and Precautions. Educational Technology 36(2): 47-50.

Tipton, M.H., Kovalik, C.L., et al. (1998). Technology Tools for Restructuring Course Delivery**.** ERIC Document: ED423866.

Williams, M.L., Paprock, K., et al. (1999). Distance Learning: The Essential Guide. Thousand Oaks, Calif.: Sage.

Hakan Tuzun

Hakan Tuzun is a Ph. D. candidate in Instructional Systems Technology department at Indiana University, IN, USA. He has a BA and M.S. in Computer Science, and an M.S. in Instructional Technology.

His interests include the use of Information Technology, including computers and the Internet, to improve human learning and performance. Towards this goal, he has been involved with design, development, and evaluation of a number of educational products. Recently, he is a designer, developer, and researcher in Quest Atlantis project (http://www.QuestAtlantis.org). This is an educational computer game, which uses a 3D multi-user virtual environment to improve learners' motivation and learning. For his dissertation he is studying the factors that make educational computer games motivating.

His homepage is at http://mypage.iu.edu/~htuzun/ and he can be reached by e-mail at hakantzn@yahoo.com.