Learning no longer occurs in one place or at one time. Face-to-face, print media, audio, and video formats are being converted into electronic delivery systems that combine telecommunication, satellite transmission, compressed video, and Internet communications using interactive multimedia in asynchronous and synchronous modes. This transformation requires that we as educators consider new paradigms, redesign accepted pedagogy, and convert existing instructional content. We need to redefine and implement effective strategies to create a social aspect that involves collaborative, guided learning, as well as multilateral communication, and cooperation between the learner and the instructor. Effective strategies must employ the same kinds of situation-based learning and active and self-motivated effort that has proven successful in traditional classrooms. Learners must be able to experience authentic problems in individualized learning contexts that provide a means for immediately applying the knowledge gained. Thus, the theoretical background and practical applications involved in experiential, active, and online learning contributed significantly in the development of this course.

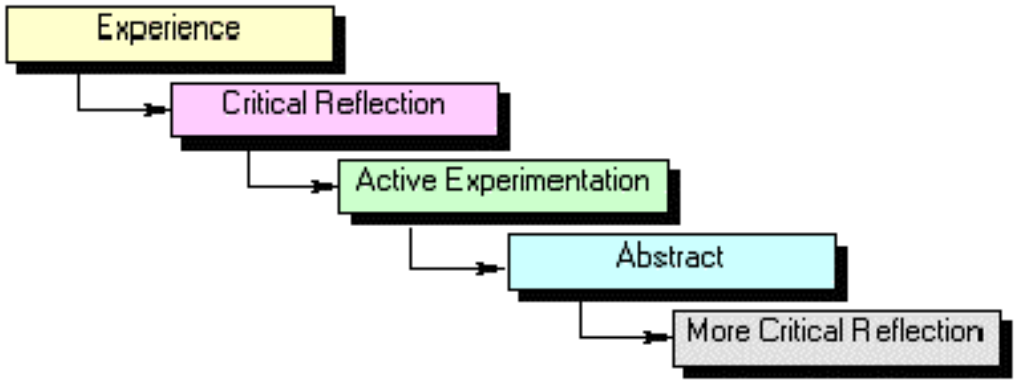
This presentation describes the significance, development, and components of an online course for graduate students that incorporate experiential and active learning in a virtual environment. The course is delivered each semester through the Educational Technology Program at Central Missouri State University, which is committed to providing personalized higher education experiences for a diverse body of students. Early in the design phase, several strategies guided the course development and application, which included adapting the learning to individualize the content, motivating the learner, and providing authentic experiences that were relevant. This online course serves as a model for the development of future courses and as a new paradigm for higher education in both pedagogical and curricular reform. The result is learner-centered education that is outcomes-driven, performance-based, and assessment intensive.

When the course begins, the student is informed that s/he has been hired as an instructional technology coordinator at the "school of your dreams." Students complete an online form that prompts them to select the level of school (e.g., K-3, K-12, 9-12), the size of the school (less than 500, 500-1000, more than 1000), and the location of the school (e.g., rural, urban, suburban). Additional information is assigned with random data (e.g., racial/gender percentages, number of students receiving free lunches, type of students with disabilities, and so on). Learners access a "virtual office" with computer, phone, Rolodex, in-box, and a bookcase containing links for each activity. The instructional content consists of four sections divided into twenty-two activities that engage learners in an active learning process that incorporates problem-solving strategies and modeling using many different forms of technology. An animated video character referred to as the “virtual assistant” guides the learner through the activities by providing specific instructions about what to do. Learners receive virtual e-mails and voice mail messages that describe their assignments. Some assignments are adaptive to an initial profile submitted by the learner; however, all assignments are completed in the authentic context of the technology director position.

Experiential Learning

In the early 1980's, Mezirow, Freire and others stressed that the heart of all learning lies in the way we process experience, in particular, our critical reflection of experience. They described learning as a cycle that begins with experience, continues with reflection and later leads to action, which itself becomes a concrete experience for reflection (Kemp, Morrison, & Ross, 1996).

Kolb further refined the concept of reflection by dividing it into two separate learning activities, perceiving and processing (Algonquin, 1996). He further added another phase called "Abstract Conceptualization." Whereas in the "Critical Reflection" phase we ask questions about the experience in terms of previous experiences, in the Abstract Conceptualization stage, we try to find the answers. We generalize, draw conclusions and form hypotheses about the experience. The "Action phase", in light of his interpretation, then becomes a phase of active experimentation, where we try the hypotheses out.



Active Learning

Environments that encourage active learning are based on learners making decisions about task, content, navigation, presentation, and assessment. They employ a number of cognitive strategies that enable the learner to elaborate on their own existing knowledge structures (schema) to construct new knowledge and understanding. Jonassen (1994) suggests six conceptual frameworks to create web-based instruction that:

- provides multiple representations of reality, representing the natural complexity of the real world
- presents authentic tasks that conceptualize rather than abstract information
- provides real-world, case-based contexts, rather than pre-determined instructional sequences
- foster reflective practice
- enables context and content dependent knowledge construction
- supports collaborative construction of knowledge through social negotiation, as opposed to competition among learners for recognition

Online Learning

Simonson & Schlosser (1995) define distance learning as "formal, institutionally-based educational activities where the teacher and learner are normally separated from each other by location and often separated in time." This definition suggests that the traditional concept of learning is changing. Traditional instructional strategies must be adapted to realize the potential of interactive technology used in online learning. Schlosser and Anderson identify skills that teachers must learn as they assume the role of distance educators:

- organizing instructional resources in a format suitable for self-paced study
- identifying learner characteristics
- designing and developing interactive courseware that engages the learner
- dealing with distributed learning copyright issues
- becoming involved in organization, collaborative planning, and decision-making
- adapting teaching strategies to deliver instruction at a distance
- training and practice in the use of telecommunications systems
- evaluating student achievement, attitudes, and perceptions of distance learning

As institutions embrace technology, designers and developers should endeavor to incorporate strategies that emulate the instructor-student interaction of a traditional classroom. Online methodologies can provide an effective method of supplementing conventional forms of teaching and learning by presenting lectures and integrating materials from several courses into a more comprehensive application. Using the Internet as the delivery medium and the web as the common user interface offers the most practical, cost-effective, and interactive environment to support distance learning.

Good pedagogy is important to the learners' perceived satisfaction with online learning. Research indicates that student satisfaction and perceived learning online are affected by the availability of interaction. When learners interacted regularly with the instructor and other students, increased motivation and higher quality learning experience were reported (Shale & Garrison, 1990). Fulford and Zhang (1993) found that learners' perceptions of high levels of classroom interaction corresponded to higher levels of satisfaction. When the instructor is inexperienced in working with the technology, maintaining a high degree of interaction often proves difficult.

As institutions embrace technology, designers and developers should endeavor to incorporate strategies that emulate the instructor-learner interaction of a traditional classroom. Effective online methodologies can provide an alternative learning environment to conventional forms of teaching and learning by redesigning lectures and integrating materials into interactive components that incorporate an active learning process.

It is generally accepted that learners retain only 10% of what they read and 90% of what they say and do (Dale's Cone of Learning). In educational technology, experiential learning provides an integral part of the instruction in the form of hands-on activities. As learners become actively involved in the process, they develop a cognitive framework that facilitates the assimilation of the experience into their individual schemas. Unfortunately, many encounters with online learning do not provide a high enough degree of interaction to motivate the learner or enhance the process of retention. Learners frequently describe their online learning experience as less than satisfying.

COURSE DEVELOPMENT

A team of individuals led by the course faculty member and a curriculum developer created the course. Departmental faculty and university support services also contributed to the course development. The process included several important components: an instructional design approach, specific design elements, learner outcomes and assessments, and creation of a timeline for completing the project.

A CD-ROM containing a tutorial, course instructions, supplemental video and audio clips, promotional information, viewers, browsers and required plug-ins was developed and is distributed to students that enroll in the class. The tutorial introduces the learner to the concept of distance learning via online courses, describes how to be successful online, conducts a learning style inventory, and gives systematic instructions on getting started. Students meet on campus at the beginning of the course to discuss course navigation and outcome expectations. Course products developed by the students are placed in electronic portfolios stored by the department and selected examples are exhibited online to facilitate exchange of ideas. When possible, expert guests are asked to join scheduled online chat sessions and discussion lists. Online students are provided the same privileges (access to library, research materials, computer network, technical support, etc.) as on-campus students.

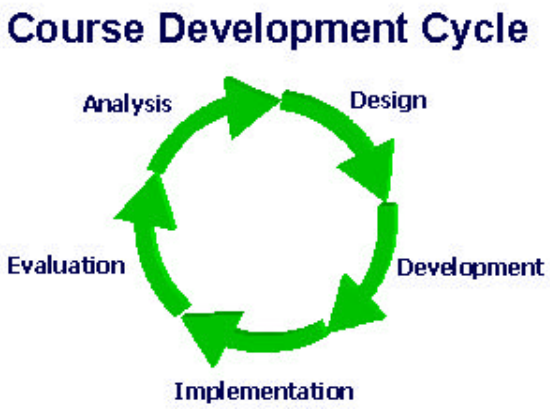
Instructional Design Model

The underlying model for this project is, STEP: Sound Theory into Effective Practice, a teacher-education model which introduces sound educational theories and helps students incorporate them into their teaching through graduated field experiences and reflective decision-making. STEP emphasizes a learner-centered approach rather than the traditional teacher-centered approach to instruction. It suggests that every component of the instruction should be governed by the learning outcomes, which have been determined thorough analysis of the learners' needs. In this course, students apply their understanding of educational theories while experiencing effective use of online courses.

Course development was guided by four general principles:

- Relevant – Does the instruction relate to the learner's needs?
- Realistic – Does the instruction provide authentic experiences?
- Motivational – Does the instruction engage the learner?
- Measurable – Can learner achievement be demonstrated?

A standard instructional design model (ADDIE) structured project development.



Functionally Contextual Curriculum

A functionally contextual curriculum (sometimes called problem-based learning) models the same kind of environment in which the content would normally be found. The kinds of situations that learners face should mirror real problems that they might encounter on the job. Because learners have some choice in determining their virtual jobs (e.g., type and size of school), instruction is individualized and learners are more motivated. Course tasks (e.g., modification of a budget, lab facility design) and products (e.g., spreadsheets, databases, and presentations) are authentic and result in learning which is active and experiential.

Design Elements

Because learners differ in abilities and attitudes, motivation was an important consideration in developing course components. Irrespective of individual differences, motivated learners must be active and curious to have a positive effect on their performance. Interactive strategies actively engage and motivate learners. Use of collaborative projects, various forms of communications, and authentic assessments stimulate interest and encourage participation. The following interactive elements were used to deliver course material in this project.

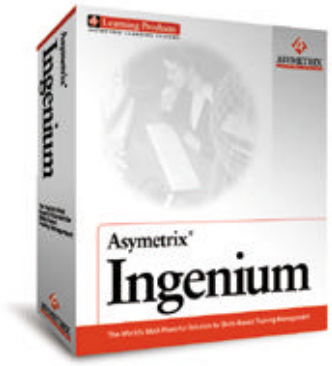
Interactive Elements	*Purpose*
Courseware	Deliver structured interactive course materials presented as modules containing objectives, content, and immediate feedback assessments of the student's progress.
Conferencing	Provides synchronous group activities and informal interviews with established experts in the field.
Discussion lists	Asynchronous communications facilitate critical thinking and connectivity among the students using threaded listservs.
Online Tutorial	Instructional tutorial materials improve success of the students by assessing their learning styles and guiding them in the use of the new online technologies.
E-mail and FAX	Facilitates communications between students and the instructor.
Video streaming	Provides face-to-face visual communication; practice, application and implementation of new technologies

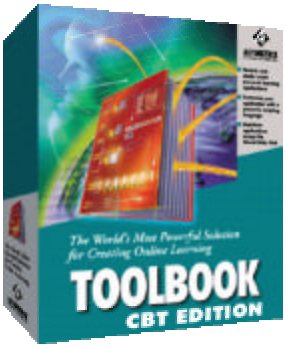
Course Development Process

Each development tool has areas of strength. Toolbook has connectivity with the high end training systems but if your population is using both PCs and Macintosh, then you may want to consider Macromedia Authorware for cross-platform features.

If you are trying to develop a product that caters to the lowest common denominator, i.e. 10-year-old computers, then forget video, and only sparingly use audio with low resolution/compressed visual images. Unfortunately, your web-based product then has a look and feel that appears ten years old. Cutting-edge products make use of video streaming, extensive use of audio clips, and have full-page high-resolution graphics. Most developers choose something in-between. For example, the following platform would be typically used for most online courses: MS Internet Explorer 5.5 browser, MS Windows 98, 450mHz processor, 50MB of hard drive space, and 128MB of memory.

First, define your environment by selecting a course delivery system (point of access). Simulations and modeling require a more sophisticated delivery system. Several large corporations and institutions use Click2Learn Ingenium. It=s a learning portal system with extensive management features that are universally compatible with other systems. However, the price ranges considerably higher than more common course management products such as WebCT and Blackboard.





Next, create authentic activities and develop interactive instructional materials. Editors for Flash, HTML, CGI, and JAVA programming provide an easy way to create interactive sequences. Tracking student progress may require a database function such as MS Access. Toolbook and Macromedia Authorware provide a highly interactive development tool with add-on tracking tools. Getting everything to work together can be tricky.

Many faculty lack sincere interest in electronic learning, and in some cases, are slow to learn the necessary tools to create highly interactive systems that offer authentic, adaptive learning environments. Onsite development and delivery are optional. Instructional materials can be created anywhere and electronically transferred to the host for immediate access by the learners. The delivery system could exist anywhere in the U.S., i.e. university, ISP, or commercial learning portal. The real key to effectiveness is the development of the instructional materials. Over time, a project may technically become more efficient and of higher quality, but the content often remains the same. Developers must be diligent in reviewing the content carefully before each course to maintain external hyperlinks and freshness. The main elements of production can be divided into the following responsibilities:

Content Specialist

There is often a tendency to develop material at a much higher level than the learner can comprehend. The best content specialist is typically a faculty member who has published materials in the subject area. Their material is passed to the curriculum designers.

Curriculum Designer

Consider the target audience and question the content specialists about what major points they are trying to make. They must seek out many sources of information to create the activities that provide authentic situations for the learners. Many consider this to be the most complex task in the development process. Developing effective activities is often difficult and requires significant knowledge of the learning process. If this task is developed properly, the rest of the project usually falls in place. As the work-in-progress develops, it is passed to the instructional designers.

Instructional Designer

The instructional designers convert the activities into sequences of electronic representations. They possess a broad understanding of the learning process and a technical perspective. They often use graphic artists and technicians to develop the audio and visual elements. These individuals must accurately articulate the intent of the curriculum designer. Failure of communications between the instructional designer and other members can result in loss of valuable time, catastrophic problems that require re-development, and enormous frustrations. The work-in-progress is then passed to the programmers.

Programmers

These are the ones (techies) who know how to make Flash, Java, HTML, and authoring software work together. Programmers often specialize in specific languages. A good programmer can be a valuable asset to an organization and difficult to keep around. Clear documentation is important to allow other programmers to take over when necessary. The work-in-progress is then passed to the course manager.

Course Manager

The course manager installs the learning modules and oversees the implementation process. Hosting online courses requires 24/7 support. Hosting is often not the primary mission for an institution and the support is not likely to be as good as outsourcing the service to a commercial learning portal. As the courses become available online, coordinators may be needed to facilitate the learning process.

***Course Facilitators* (coaches)**

Although faculty members serve as the primary academic support, monitoring online courses requires significant technical expertise and time. Facilitators provide a practical solution and may serve as a guide for both the student and the faculty. Each coordinator usually manages several courses or sections of a single course and acts as a communications moderator to keep students on-track and the faculty informed of their progress. They facilitate the learning process by reviewing submitted materials, answering questions, and providing encouragement. When students know there is a person at the other end, they approach the learning very differently, especially adult learners. Good coordinators can significantly impact the quality of experience of the learner and provide a higher degree of success in the course.

Program Evaluators

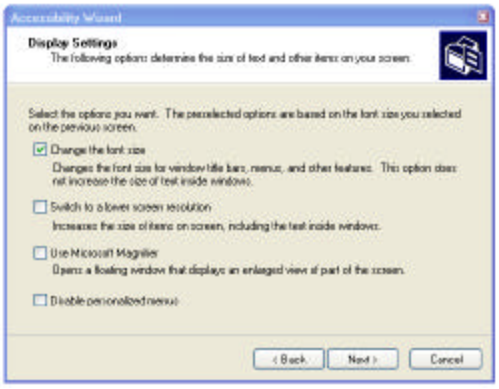
External review by individuals not involved in the process is essential. A good evaluator has a wide range of expertise, including knowledge of the subject matter, the design process, and assessment strategies for online learning. Individuals directly involved in the development process can be biased and may overlook the obvious. Feedback is essential for making effective changes in the product.

Many perceive online learning as continuous work online until an activity is completed. Online learning should require some activities offline and even off the computer. In terms of planning university courses, each three-credit hour course is 36-45 contact hours. That means you have to develop enough material for 36-45 hours of activities plus 20-30 hours of assignments. A master's degree or certificate program may contain 32 credit-hours of courses. This represents nearly 1000 hours of activities. Actual online time would depend on the requirements of the activities.

Providing supplements to assist English as a second language (ESL) may also be a necessary component. ESL materials should provide additional vocabulary activities that are integrated into the curriculum with hyperlinks allowing the ESL learner to enhance their understanding of the activities.

In recent years, computer technology has dramatically changed the way we access information. And for no group is this more dramatic than for those with disabilities. With the support of assistive technology, people with all types of disabilities should be better equipped to enter the mainstream of information access. Until recently, these enhancements required the user to

obtain specialized software that provided the desired feature. With performance improvements in computers, accessibility features have been gradually incorporated into the operating system to address many forms of impairment.

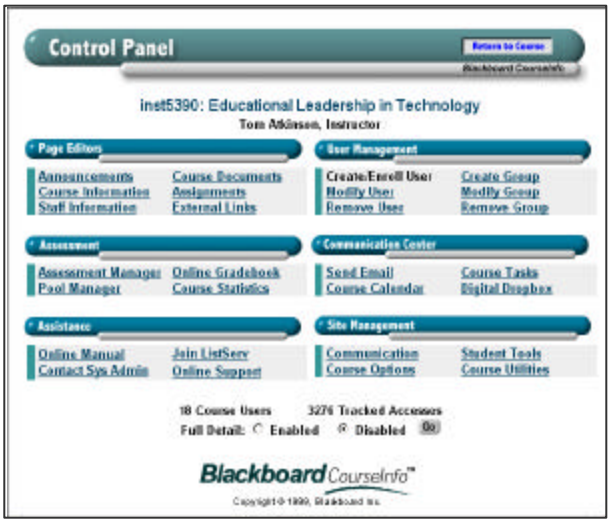


Accessibility features provide better integration with assistive technology and easier communications that allow people with accessibility needs to work more effectively. The appearance and behavior of these features can be adjusted for specific vision, hearing, mobility, cognitive, and seizure-related needs. "Rich media", refers to elements on a Web page (or in a separate player) which exhibit dynamic motion over time or in response to user interaction. Rich media players typically have menu items that allow captions and other accessibility features to be turned on or off.

For more information about improving accessibility to Web pages on the Internet, visit the following sites:

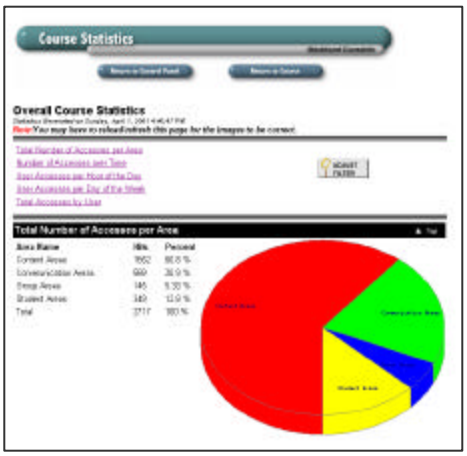
- BOBBY - Named for the British police officers, this site hosts a Web-based program that identifies accessibility problems on Web pages and teaches designers how to make sites more accessible. It also illustrates how Web pages will look via different browsers. http://www.cast.org/bobby/
- Web Accessibility Initiative - Sponsors information and resources. Take a look at some of the items (e.g., making a Website accessible, list of checkpoints for Web accessibility; quick tips for making Websites accessible) in the "Easy Introductions" section. http://www.w3.org/WAI/
- Designing More Usable Websites - Provides comprehensive links to references, tools, and numerous resources for increasing the accessibility of Websites. http://trace.wisc.edu/world/Web/
- Accessibility Tools for Adobe PDF Documents - Supports free tools that allow vision impaired users to read documents in Adobe PDF format. http://access.adobe.com/tools.html
- CPB/WGBH National Center for Accessible Media (NCAM) - A research and development facility that strives to make media accessible to underserved populations such as disabled persons, minority-language users, and people with low literacy skills. http://ncam.wgbh.org/

Blackboard was used as the primary course management system to provide students access to content, assessment, and communications features. The Blackboard learning environment includes a header frame with images and buttons customized by the institution and tabs that navigate to different areas within Blackboard. Clicking on a tab will open that area in the content frame. Web pages containing specific content, features, functions, and tools are accessed from the Tab areas.



The Course Tools contains communication and collaboration tools that enhance interaction between students and instructors with asynchronous discussion boards and synchronous chat tools. The tools allow users to:

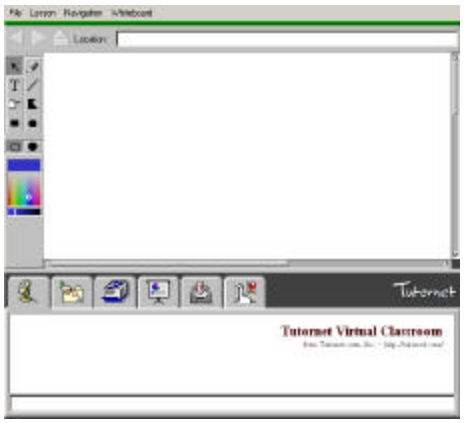
- interact and learn from each other with threaded discussion boards,
- manage online discussions such as sort messages by author, date and/or title, collect all messages in a printer-friendly format, and archive discussions at any time,
- share documents as discussion board attachments or through the Digital Dropbox,
- hold virtual office hours or field trips through the updated Virtual Classroom™ environment with real time chat, whiteboard, and slide creation.



Instructors can use the Course Statistics area to generate reports on the course usage and activity. Reports can help the instructors determine whether they need to add more content or other information to the course to increase traffic. Instructors can view specific student's usage to determine if some students require extra assistance. The report appears in the form of a graphic.

Although the Blackboard Course Statistics track user access, students require frequent feedback on their progress in the course. A spreadsheet was constructed to indicate their progress as they completed course activities. After completing an activity, students sent their results to the instructor by using the drop box feature. Within a couple of days, the instructor reviewed the assignment and placed a checkmark to indicate acceptance of the material submitted. Students found it very helpful to monitor the progress of others in the class to determine their pace.

The most popular activity in the course occurred as a synchronous chat in the virtual classroom where students interacted after viewing video segments on conflict resolution role playing. The Virtual Classroom allows the instructor and students to participate in real time lessons and discussions and also view archives of previous classroom sessions. The virtual classroom, or the chat room, can be used to hold real-time, online classroom discussions, TA sessions, and office hour type

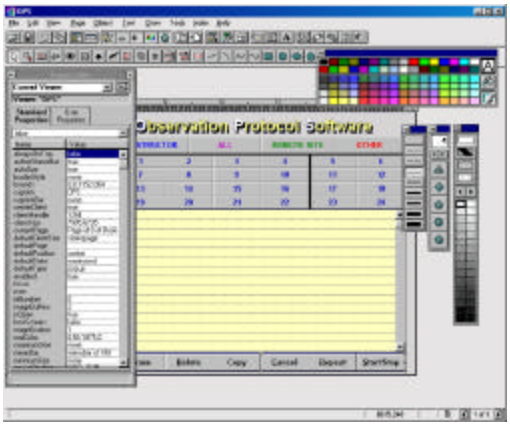


question/answer forums. Because all sessions are stored and may be reviewed afterward, students must be cautioned about accessing the chat area outside of classroom discussions.

There are many course managers from which to choose when conducting an online course. Many institutions adopt the lesser expensive options and then struggle to update features. The following chart compares specific features of several popular course managers. For a more complete overview and demo, visit http://www.utoronto.ca/cat/courseware/demos/.

	Classnet	Colts 2.0	Web Course In A Box	Intralearn	Top Class 5	Webct	Learning Space	Blackboard
1	√						√	
2	√	√	Only the student		√	√	√	√
3	*Limited*	√	1 year	√	√	*Limited*	√	√
4	√		√	√		√		√
5	Only between students and the instructor		√	√	Only between students and the instructor	√	√	√
6	*Limited*		*Limited*	√		√		√
7	√	√	√	√	√	√	√	√

1. Requires knowledge of HTML
2. Can access courseware entirely through browser
3. Provides technical support and online help
4. Contains built-in chat capabilities
5. Manages email support
6. Provides synchronous presentation area
7. Supports discussion threads



Although features of Blackboard are adequate for delivery of instruction, it is not an instructional development system. Combining Blackboard with an authoring software package such as Toolbook allows the designer to construct environments that are highly interactive. While Blackboard allows animations and limited responses from the user, complex interactions require a programming language (JAVA) or a sophisticated instructional development tool.

Part of the cost of development should include licensing of the development software (Toolbook, Macromedia, etc.) to distribute the instructional materials. Distributing the content may require contractual agreements with the content expert to secure intellectual property rights. Incorporating copyrighted materials into the course may require permission and/or payment of royalties.

Course Development Timeline

The following timeline was initially established for the development of the course; however, course development proved to be more complex than first planned. Tasks were revised, rescheduled, and enhanced as a result.

Month	Tasks	Description
1	Organize course content	scope and sequence, graphics, audio & video clips, animation
	Identify support structures	web managers, help desk, technical and curriculum support
	Research course formats	advanced organizers, interactive elements, online exams, etc.
	Research courseware tools	CourseInfo, FrontPage, Toolbook
	Concept mapping of features	content, storyboards, functions, fonts, colors, etc.
	Design templates	user interface, interactivities, etc.
2	Create prototype model	construct typical and unique web pages
	Create management structures	input course syllabus, assignments, discussion lists, etc.
	Convert data for courseware	digitize graphics, audio, video materials, PDF
	Create course modules	construct pages, assemble components
	Set up course delivery system	create security, student test accounts, tracking system
3	Alpha version testing	Offline application testing of courseware
	Complete modifications	add final courseware features, content, management structure
	Install courseware applications	transfer applications to web server
	Beta version testing	use students in production classes to test modules
4	Create online evaluation tools	construct survey instruments for evaluating performance
	Develop marketing strategies	brochures, online billboards, mailouts, target audience, websites
	Release marketing promotions	mailouts, brochures, online billboards, organizations
	Prepare online support	service function for technical support
5	Online implementation	begin delivery of course using online format
	Monitor deployment	analyze survey results and implement changes
	Conduct user evaluations	survey students, analyze learner achievement
	Refine product	modify design and content of modules

Initially, Microsoft Excel was used to organize the course. The spreadsheet featured the following headings: section, estimated time for learner completion, activities, discussion thread, scenario, location/elements, outcomes, and library contents. The following excerpt shows the information for one activity in the course.

1	Developing Leadership Characteristics & Roles								
Section	Time	Objectives	Activities	Discussion	Scenario	Elements	Outcomes	Library	Quotes
1.1	120	To identify leadership characteristics.	Conceptual synthesis activity: How do you recognize leadership in technology? Identification of characteristics (risk-taking, decision-making, innovation, management of people and resources, goal-setting, problem-solving) from audio clips.	What characteristics do you believe contribute the most to leadership in instructional technology.	The learner plays audio clips and reads job responsibilities of six people in a rolodex on the desk. The learner will identify and list leadership characteristics (using clipboard) and synthesize a definition of leadership in technology (using clipboard) that will be posted for review by other students. Only the definition will be posted for review by the other students. The definition is stored in an online electronic portfolio (located in the file cabinet). Only the instructor and student should have access to the portfolio documents. The portfolio should serve as a checklist for the instructor to verify the learner's progress.	Rolodex, Clipboard, bookcase, bulletin board	Post role descriptions and leadership characteristics to the group	Overview of Leadership, http://www.mapnp.org/library/ldrship/ldrship.htm AdvanceNet Resource Center, http://www.edvancenet.org MO State Dept of Education, Div of Instruction, Instructional Tech http://www.dese.state.mo.us/divinstr/instrtech/	Good leadership consists of showing average people how to do the work of superior people. John D. Rockefeller

COURSE CONTENT

The content was derived from material used in traditional instruction of the course where students attended in person. The original content was modified for electronic presentation and restructured into course components that incorporated introductions, activity scenarios, bookcase contents, experiential and active learning strategies, and various types of course products. At the beginning of each section, a brief description introduces the learner with an overview of the content. A table summarizes the purpose of each activity and the task to be accomplished.

ACTIVITY	DESCRIPTION	OBJECTIVES	OUTCOMES	TIME
1.1	Conceptual Synthesis	To identify leadership characteristics.	Post role descriptions & leadership characteristics to group	120 min
1.2	Leadership Assessment	To identify personal leadership strengths and weaknesses through self-assessment.	Place assessment results in electronic portfolio	60 min
1.3	Educational Technology Roles	To match job descriptions to roles in educational technology.	Place inventory results in electronic portfolio	60 min
1.4	Personal Interview	To identify how individuals in the field perceive their roles.	Place interview report in electronic portfolio. Contribute to asynchronous discussion.	180 min
. .	. .	. .	. .	. .

The interactive learning modules addressed the following course topics:

- Current Issues in Educational Technology, Learning, and Equity
- Leadership Roles and Professional Development
- Instructional and Administrative Computer Applications
- Technology Planning and Implementation in Schools
- Facility Designing, Budgeting and Financial Planning

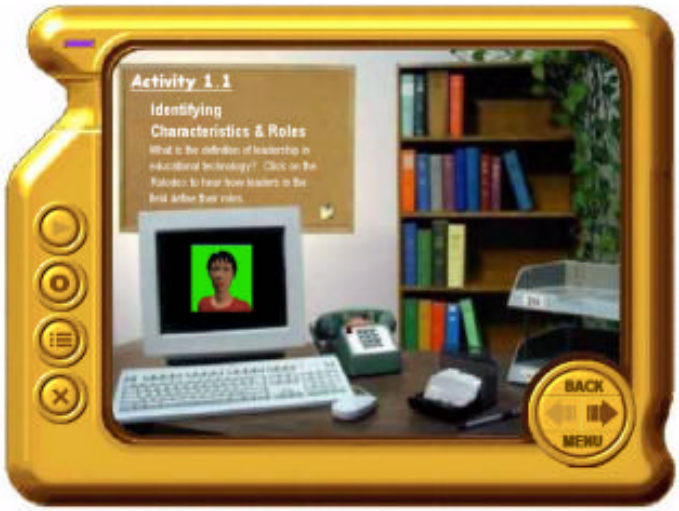
Learner Outcomes and Assessment

Learning outcomes make the curriculum visible by: a) allowing students to know what is expected from them, b) determining effective instruction, c) providing parameters for evaluation, and d) stressing the behavioral changes expected, rather than attitudes or insights that cannot be measured. In this course, students must use a range of technological tools in authentic situations in order to create course products. For example, software comparisons must be submitted using a database program. Information about technological accommodations for students with disabilities must be integrated into an existing PowerPoint presentation. This course focuses on the following learning outcomes where students demonstrate knowledge of:

- Issues and models related to leadership in staff development
- Strategies for and issues related to managing the change process in schools
- Issues related to facilities and resource management
- Assessment measures the competence or capability of learners in terms of whether or not they have realized the course objectives.

Activity Scenarios

Activities build sequentially as learners solve problems in simulated situations. Learners work out of an office and receive assignments via virtual e-mail or voice mail. An animated virtual assistant on the computer screen provides help. Each element on the screen links the learner to specific functions needed to complete the activities.



In each activity, a scenario describes what the learner must do to complete the tasks. After the virtual assistant introduces the activity, an e-mail or voice-mail message provides specific instructions on how to proceed.

Virtual Assistant message (animated video):

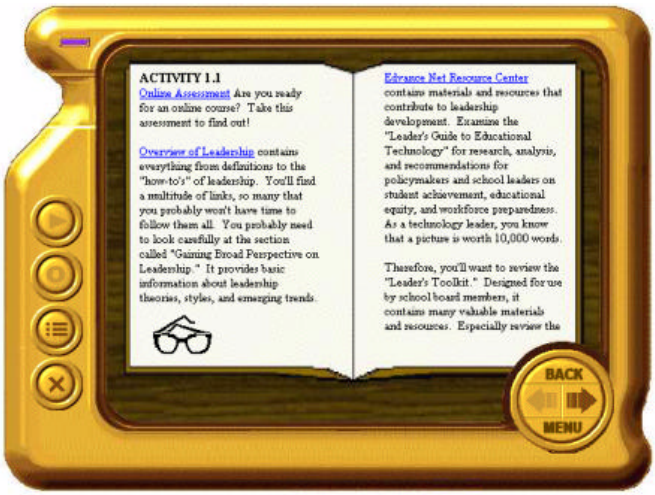
> "Leadership in educational technology involves developing a vision for where, when, and how you manage people and resources. This requires planning and evaluation. This section helps you understand the processes of planning and funding technology. The final activity focuses on current trends in educational technology published within the year. The assistant superintendent left a voice mail for you. There's a form on your desk for comparing technology plans. After completing the form, e-mail it back to her by clicking send on the computer. Please respond to the discussion questions in the course manager for this activity."

Virtual voice-mail message (audio clip):

> "Hi, this is Susan, I'm the assistant superintendent for curriculum. In thinking about technology grant opportunities, I realized that we need an update on our technology plan. Construct a comparison table of a state plan and any other local plan to develop ideas. I'm sending you a form to guide you in making your comparison. Complete the form and email it back to me."

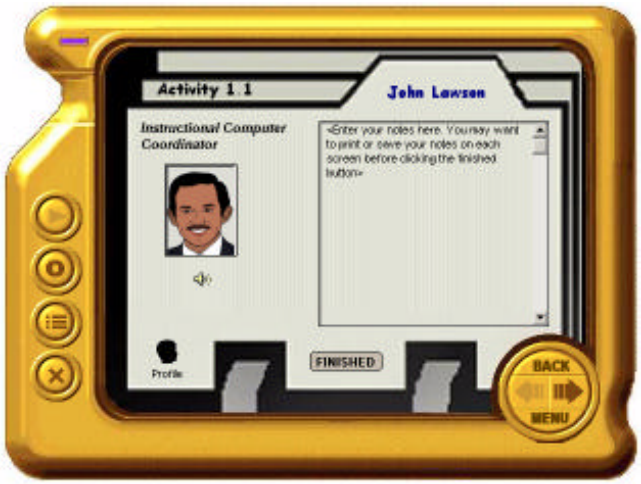
Bookcase Contents

Each book on the bookcase holds links to files or websites relevant to understanding the content. The number of shelves in the bookcase corresponds to the number of sections in the course and the number of books on each shelf corresponds to the number of activities in the section. When learners click on the bookcase, they get an expanded view of the bookcase. Click on a specific book opens it to reveal pages with links used to complete the task in the activity.



Experiential Active Learning

Course activities were designed to reflect authentic experiences that an instructional technology coordinator might realistically encounter. For example, to develop a definition and roles of leadership in educational technology, one might realistically talk to colleagues to find out what their jobs involve and look at job descriptions for different positions in the field. To complete this activity, the learner looked through the Rolodex and "called" individuals. They listened to a sound file in which the person described the job. Then, they could click on the Rolodex card to get the person's job description. Learners reflect on their understanding by creating a comprehensive definition of leadership in educational technology after listening to six different individuals describe their job responsibilities.



Active processing of the concepts is delivered in both asynchronous and synchronous modes during online chats, discussion threads, and video streamed web casts.

Course Products

As a graduate course in technology, students are expected to exhibit expertise in using common software applications. Many of the activities, such as, modifying a budget, creating a two-dimensional floor plan, completing online assessments, and reviewing instructional technology plans require the learner to demonstrate proficiency in using spreadsheets, databases, electronic presentations, and e-mail.

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PRESENTERS

Dr. Tom Atkinson received a Ph.D. in Educational Leadership and Research from Louisiana State University where he served on the LSU Advisory Council for Distance Learning. He currently teaches graduate courses in Educational Technology at Central Missouri State University and serves as an adjunct professor in the Educational Leadership Doctoral Program at Missouri University in Columbia. As a member of the Strategic Planning and Resources Advisory Council at Central, his leadership in the development of online graduate degree programs contributes significantly to the university goals for distance education.

Tom Atkinson, Ph.D., Assistant Professor
Central Missouri State University
Educational Leadership and Human Development
4246 Lovinger, Warrensburg, MO 64093
tatkinson@cmsu1.cmsu.edu

Dr. Rhonda Atkinson received her Ph. D. in Education from Louisiana State University and currently teaches at Central Missouri State University. Specializing in curriculum development, she authored seven published texts for college level and created content for several nationally recognized grant projects. Her understanding of distance learning methodologies and the application of the active learning process to content areas contributed significantly to the success of this project.

Rhonda Atkinson, Ph.D., Assistant Professor
Central Missouri State University
Center for Academic Enrichment
127 Humphreys, Warrensburg, MO 64093
ratkinson@cmsu1.cmsu.edu