

WebCT vs. Blackboard:
Report of the Course Management Task Force

Submitted by the
Course Management System Task Force

December 5, 2002

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MEMORANDUM

TO: Richard Collings, Vice Chancellor for Academic Affairs
Tom Franke, CIO

FROM: Tom Franke, CIO
Alan Altany, Director, Coulter Faculty Center

DATE: December 5, 2002

SUBJECT: Report of the Course Management System Task Force

Here is the report you requested. The CMS task force was asked to develop a process for evaluating Blackboard and WebCT that gave a voice to affected groups and individuals. Our goal was to recommend a single platform. We considered functionality, initial and on-going costs, and the relationship of each platform to the university's technology infrastructure. As charged, we also made suggestions about implementation and support.

The taskforce found that WCU's best course was to stay with WebCT, its primary Course Management System (CMS). Because so many here have invested time and resources learning WebCT, we felt that Blackboard would have to offer significant advantages to justify a change. We found few advantages; in fact, WebCT seems superior in most respects.

The committee actively solicited faculty and staff input in the form of email, open demonstrations, and questionnaires. Those who responded preferred WebCT by a ratio of three to one. We sent detailed questionnaires to each vendor, solicited advice from those using the programs, and held a public, 16-campus videoconference to learn how each campus chose between the two systems. The results of those surveys, questionnaires, and forums are appended to this report, as are two articles we found especially useful.

Keeping faculty involved and excited will be key to making CMS a success at WCU. Most faculty who responded to our surveys already use a CMS; most perceive Blackboard as more accessible to novice users. We believe recent innovations have closed that gap; however, we should make a concerted effort to promote WebCT's improved accessibility and to present it in a form that new users will find non-threatening. If we want CMS use to grow at WCU, we should also take care to assure those who are resistant that CMS will be used to enhance teaching and not to replace faculty.

Thanks for giving us the opportunity to investigate these two options. We found the process enlightening, and we know faculty and staff appreciated the chance to express their views.

Please let us know if you have any questions.

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EXECUTIVE SUMMARY

This report analyzes pedagogical, technological, and financial issues involved in WCU's commitment to a single Course Management System (CMS). Because of its sophistication and flexibility and because of the preference of UNC faculty and staff, we recommend the university select WebCT. However, we strongly urge WCU to find ways to enfranchise those who perceive WebCT as confusing and complex, such as emphasizing improvements in recent versions of WebCT, creating course templates for novice users, and presenting users with a simplified interface.

Accessibility and Ease of Use

Although most users perceive Blackboard as far more user friendly, recent innovations to WebCT make it just as easy for novice users to master. Moreover, WebCT has the flexibility and features to grow with WCU as our faculty gain more technical sophistication.

Cost

WebCT is cheaper to purchase and integrate than Blackboard. In fact, the total cost of purchasing a university-wide license and integrating WebCT with other campus software systems is almost equal to the university-wide license of Blackboard alone. Moreover, most of WebCT's features are included; Blackboard, on the other hand, partners with outside vendors, a practice which could result in many hidden costs.

WebCT's Pedagogical Edge

WebCT's newest versions make course design easy for new faculty. Moreover, it has highly flexible pedagogical tools that do more than imitate current paper alternatives. Many faculty believe integration of courseware into the distance or web-enhanced classroom makes them more thoughtful course designers.

WebCT also offers several pedagogical features that make it the more attractive alternative, such as its **WebCourse Builder**, which is a template that can be turned on or off by the administrator. The WebCourse Builder helps to increase the ease of use of the software. The entire semester can be planned out privately in this area and in the **Calendar**. Faculty can control when course material becomes available to students through **Selective Release**, a feature in WebCT that allows faculty to take a proactive approach to teaching and learning.

Technical Support and Integration with Current Software

The integration issue evidence indicates that both vendors could work with other campus systems, including Campus Pipeline and SCT. Information presented by WCU's Information Technology representatives reached the same conclusion. However, Blackboard integration would require the development of a custom set of computer code. At this time, WebCT is easier to integrate with the university's SCT administrative systems.

Switching WCU's many current users from WebCT to Blackboard would be time-consuming and difficult. Blackboard representatives said that their conversion tools would convert only half of the course text and features automatically. The rest of the work would have to be done manually.

The most important issue that emerged from these discussions was the need for quick response to technical and course-feature issues.

Keys to Increased Faculty Involvement

Finally, large-scale faculty involvement will be crucial to make WebCT, or any CMS, a success at Western. For distance learning to prosper and increase enrollment on this campus, faculty must see the advantages of the course management system we choose, and they must be reassured about WebCT's difficulty and WCU's commitment to support.

Faculty frequently used this process to express a strong preference for a multi-tiered, department-centered support model over WCU's current centralized workshop model, even though the task force did not solicit opinions about support. Faculty also often expressed doubts that their opinions would be heeded. WCU should take every opportunity to engage faculty in the process of developing new support models rather than apprising them of decisions already made.

Critical to that effort will be WCU's efforts to ensure that web-enhanced and distance curricula remain the faculty's domain. Faculty must be reassured that their course content belongs to them, and that CMS will never be used to make human interaction obsolete. Visible, thoughtful efforts to assure faculty that academic considerations are WCU's first priority will ensure CMS is a successful part of our efforts to expand access, boost enrollment, increase retention, and improve our service to students and to the community.

INTRODUCTION

This fall, the Course Management System (CMS) Taskforce was asked to recommend a single courseware for WCU. Although the university currently owns and uses WebCT in its Distance Learning courses, computerized support of instruction has been used by faculty teaching in other modes, including traditional face-to-face instruction. Faculty have also developed courses in Blackboard, created course web sites, or used other kinds of computer-supported course management. Many have asked for access to and instruction in the use of course management software, and WCU hopes to significantly expand faculty use of online instruction. To provide enhanced support for these diverse efforts, the university needs to select a single system.

The CMS Task Force was charged to:

1. Develop a strategy for evaluation of platforms that will result in a recommendation by the end of fall, 2002.
2. Provide opportunities for input and involvement by affected groups and individuals.
3. Present a final report to the Vice Chancellor for Academic Affairs and the Chief Information Officer, including in the report your recommendation of a single platform with a rationale that addresses at least these factors:
 - 3.1. Assumptions about future uses of CMS at Western Carolina University,
 - 3.2. Assumptions about the relationship of the CMS platform to the university's technology infrastructure
 - 3.3. Functionality and ease of use of the recommended platform,
 - 3.4. Initial and on-going annual cost of the recommended platform (both product and support)
 - 3.5. Suggestions related to implementation and support of the platform (The task force is not expected to create a detailed implementation plan).

Why we must choose now

Maintaining WCU's Competitive Edge.

In recent years Western has twice been designated a "most wired" campus, and we have worked to increase our technological edge. However, we must keep pace with the rapidly growing distance learning market. Course management systems like Blackboard and WebCT can also be used to enhance on-campus classes by expanding opportunities for student interaction and access. Moreover, current WCU students have a great deal more technological sophistication than students had just a few years ago, and they expect these innovations. Their experience with WCU technology may carry more weight with prospective students back home than any other kind of publicity.

The sooner WCU chooses a single CMS, the sooner we can implement support strategies and promote the advantages of CMS to faculty and students.

Trends in Academe

A recent report by the National Academy of Sciences "warns academe against 'complacency' in the face of fast-paced technological developments and new competition from online universities and for-profit institutions. The report cautions that research universities should respond 'with carefully considered strategies backed by prudent developments -- not just to avoid extinction but to actively cultivate opportunity'" (Kiernan). This report, written by administrators and industry officials, warns that "changes being induced by information technology" will "alter the fundamental relationship between people and knowledge."

This report sees a grim future for the academy as we know it, one in which faculty act as “information consultants” and in which for-profit institutions could “undermine the current business model of the research university and imperil its core activities.”

In order to help shape this future, faculty must become involved quickly. Only through consultation and consensus-building can faculty ensure that pedagogy, not profit, will drive distance learning. Mark F. Smith, director of government relations at the American Association of University Professors, says that “[I]t's important that all members of the community are involved.”

See Appendix H: Technology Will Reshape Research Universities Dramatically, Science Academy Report Predicts

Distance Learning Growth in the UNC System

One of President Broad’s key initiatives is Access, and a major component of increasing access is developing a sound strategy for implementing distance learning into the classroom. Information Resources, a division of the Office of the UNC President, includes these four goals in its IT Strategy Document:

- Meet the state’s education and training needs by expanding access to underserved populations.
- Alleviate capacity constraints: Accommodate the expected 31% increase in enrollment over the next 10 years by teaching a large number of students online.
- Pursue new markets for education, such as "corporate learners" and "professional enhancement learners," in order to meet individual needs, generate revenue and contribute to regional economic growth.
- Position UNC to capitalize on new opportunities, to be responsive to students’ needs for flexible learning options, and to increase student choice.

Figure 1: UNC Enrollment Increases in Distance Education and Resident Credit Students, shows that student enrollment in distance-learning courses is already increasing rapidly. A focused-growth institution, Western receives funds to grow its enrollment and increase its retention. We should seize the opportunities presented by CMS to help us attain those goals.

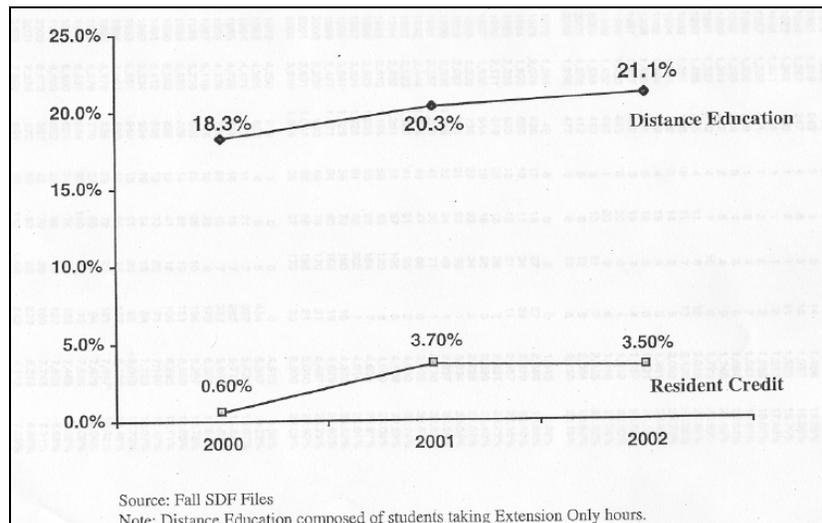


Figure 1: UNC Enrollment Increases in Distance Education and Resident Credit Students

IT Restructuring and University-wide courseware initiative

Until recently, campuses licenses for CMS software such as WebCT were held by the Division of Continuing Education and Summer School, and faculty had few opportunities to use them. However, WCU is now encouraging a much wider use of CMS. This year, CMS was available to all faculty, and the Coulter Faculty Center offered many workshops to support and promote its use.

This increased access to CMS has many advantages to faculty. It can streamline grading, increase student access to information, increase student interaction, and dramatically improve faculty access to online materials. Moreover, because CMS software has been around for several years, the learning curve and flexibility of both applications has increased tremendously.

Tom Franke, WCU's Chief Information Officer, recently announced a reorganization of all IT support at WCU. The sooner WCU commits to a single CMS program, the sooner faculty can learn about pedagogical issues related to its use so that they can actively shape IT policy and support on campus.

Scope and Limitations

- Since all UNC schools have been asked to choose either WebCT or Blackboard, the task force did not consider other CMS programs.
- Though every effort was made to gain input from all faculty, the committee got few responses from those faculty who have never used a course management system. Most opinions expressed were from experienced users, who overwhelmingly prefer WebCT.
- The CMS task force was charged with deciding between two systems. Though students have important insights into course design and support, few WCU students have experience with Blackboard. Therefore, the task force did not solicit input from WCU students to make its recommendation.

Sources and Methods

Questionnaires and Open On-Campus Demonstrations

The CMS Task Force sent both vendors detailed questionnaires about their products' technical and pedagogical features. It made the results of those questionnaires available in Outlook public folders. It also scheduled two open on-campus demonstrations for both WebCT and Blackboard to encourage faculty and staff attendance. Each on-campus demonstration contained an introduction to the system, an overview of pedagogical features, and a session especially for advanced users.

Call for Faculty and Staff Input

The Course Management System task force encouraged all faculty and staff to email their college representatives on the committee. All those responses were placed in the Outlook folder, and selected comments are appended to this report (See **Appendix D: Selected Faculty and Staff Responses**). The task force also invited faculty to attend its open meetings.

Review of Literature

CMS task force members reviewed literature relating to pedagogy, academic freedom, technical integration, budget, and the future. Members of the WCU community also forwarded extensive

information. For a compiled list of online literature on distance learning, please see the Chronicle of Education Issues in Depth section at <http://chronicle.com/indepth/distance/>. Two especially pertinent articles, one on the implications of online learning for academe, and one on a model for faculty involvement in the creation of campus IT policy and support, are appended to this report.

See **Appendix H: Technology Will Reshape Research Universities Dramatically, Science Academy Report Predicts** and **Appendix I: Open Course Ware: A Case Study in Institutional Decision Making**

Interviews and Teleconference

The CMS task force interviewed faculty and staff from other campuses to learn about their experiences with Blackboard and WebCT. In addition, the task force participated in a video conference with representatives from the 16 constituent UNC institutions to learn what factors caused them to choose Blackboard or WebCT.

Organization

The body of this report is organized around four main issues:

- **Faculty and staff input from WCU and the UNC System.** Because faculty and staff expressed a wide range of concerns, and because their opinions were the crucial factors in determining the task force's recommendations, we included these in a separate category.
- **Pedagogical Issues.** This section considers the strengths of each program for course design and student learning.
- **Budget.** This section details the costs involved with fully integrating each system at WCU.
- **Technical Considerations.** This section includes an analysis of each system's compatibility with WCU platforms, networks, and existing online systems.

This report also includes several appendices with information useful for those who want a fuller understanding of each system and for those who will use and support the system we choose.

WEBCT OR BLACKBOARD: FINDINGS

Faculty and Staff prefer WebCT but find Blackboard more accessible

WCU Faculty and Staff.

The Taskforce called for opinions about WebCT vs. Blackboard, encouraging faculty and staff to email their college representative and to attend demonstrations, task force meetings, and the videoconference. Faculty who emailed their representatives clearly preferred WebCT. Most of those were current users of WebCT who said they did not want to learn another software. However, six also cited WebCT's power and flexibility; and no indicated they thought that Blackboard was more powerful.

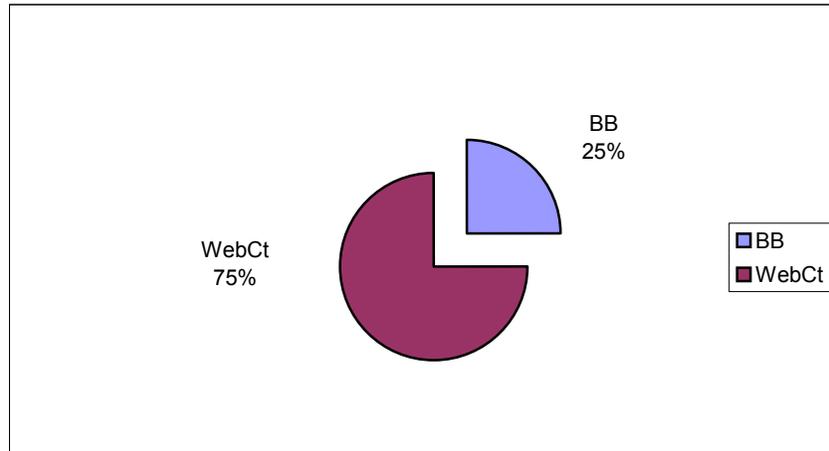


Figure 2: Faculty who prefer WebCT or Blackboard (preferences expressed by email)

However, seven indicated they thought Blackboard was easier, more accessible, and more likely to encourage faculty involvement, and no one indicated they thought WebCT was easier or more accessible.

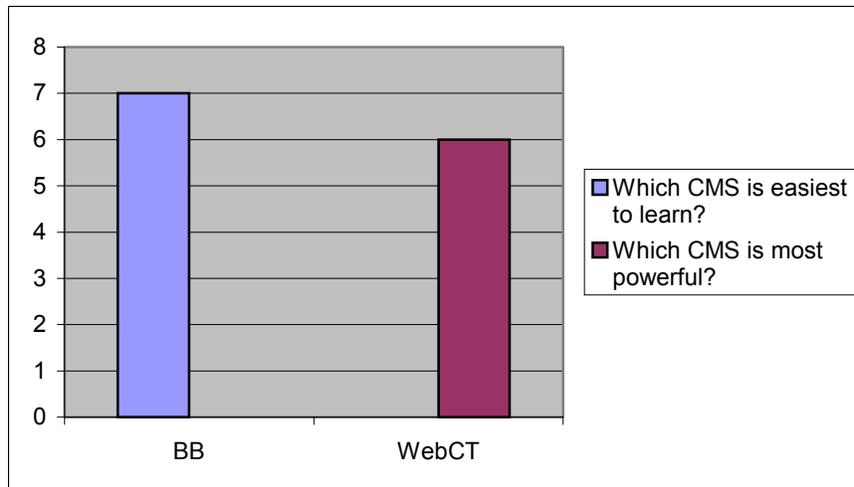


Figure 3: Accessibility vs. Power

These tables suggest a marked preference for WebCT’s perceived power and flexibility over Blackboard’s perceived ease of use. However, most of those who responded had used one or both course management systems for years, and the most frequently expressed justification for WebCT was the time and money WCU faculty and staff have already invested in it. The committee did not get much feedback from faculty who have been reluctant to learn any course management system. Although they were not asked about support, many said that the kind and amount of support that would be offered was more important than the choice of a CMS.

See Appendix D: Selected Faculty and Staff Responses

UNC Perspectives

In a videoconference with the other UNC campuses, the task force learned that most schools chose WebCT. Their reasons were power, flexibility, and WebCT's history on their campus. They described WebCT as better for "individual, self-paced" learning because of its "selective release" feature. They also said that WebCT had more support for individual instructors with "specialized needs."

Faculty and staff at the four schools that chose Blackboard—Chapel Hill, Greensboro, East Carolina University, and Elizabeth City State—were enthusiastic about Blackboard's ease of use and ease of support, adding that it dramatically increased faculty involvement in distance learning (Chapel Hill rapidly went from 50 sections to over 1,000 sections). However, schools that had switched from WebCT to Blackboard found the transition extremely difficult. Chapel Hill said it took 1.5 years for 50 courses.

One WebCT school, Appalachian State, saw an increase in WebCT involvement after they decided to use uniform "course templates" for beginning faculty, who said that WebCT's complexity would have "driven most of them over the edge." Their experience suggests that under the right conditions, inexperienced faculty might find WebCT as accessible as they find Blackboard. However, any promotional and support strategies would have to counteract faculty perceptions that WebCT is "too complex."

Several schools described their support and transition strategies, adding that they were most successful when technicians and instructors went to departments rather than requiring faculty to attend centralized workshops.

See **Appendix G: Notes from UNC 16-Campus Videoconference (compiled by Steve Eberly)**

Pedagogical Features of Each System

Ease of use and flexibility

The course management system should be intuitive so that faculty can quickly get started in putting their course material online. The ease of use and flexibility of uploading course material is crucial to online educators. One of WCU's typical Master of Project Management courses contains over 200 files. Blackboard relies on templates to insure ease of use for designers. Christy Slifkey, Blackboard Managing Consultant, analogizes Blackboard to a piece of Tupperware -- acts as a "holder" that does not change what designers put in it. To add any type of course content, whether an .html file, .ppt file, an image file, etc., the designer fills out a three-step template for each file. Therefore, a designer in the Master of Project Management Program would have to fill out over 200 individual templates to upload their course material in Blackboard. This would be extremely time consuming.

In WebCT designers can upload all of their course material to a storage area, **Manage Files**, in three ways: uploading individual files, uploading zip files and then unzipping them within WebCT, and by using WebDAV. WebDAV offers designers drag and drop file management. This means that the designer does not have to upload files individually or by zipping and unzipping. A folder is created on the designer's hard drive, which mirrors their Manage Files area of their course. Folders and/or files can be brought into this folder by dragging and dropping from anywhere on the designer's hard drive or from a disk, etc. The designer can then organize their course material by dragging and

dropping into various folders within the mirrored Manage Files folder, which saves time on the task. With Blackboard the designer has to upload each file individually to the content tool.

WebCT offers faculty a **WebCourse Builder**, which is a template that can be turned on or off by the administrator. The WebCourse Builder helps to increase the ease of use of the software. WebCT also allows for the WebCourse Builder to be used in conjunction with a customized template. Therefore, the WebCourse Builder can be used along with a standard template containing the most commonly used tools.

Instructional Design and Features

WebCT allows designers to plan out their entire course curricula in the Manage Files area. This helps faculty design a pedagogically sound course. In the Manage Files area, a folder/subfolder/file hierarchy can be created. The entire semester can be planned out privately in this area and in the **Calendar**. Faculty can control when course material becomes available to students. Having this control and flexibility is advantageous since it helps generate student interaction. Students will be moving through the course material at the same time, and therefore will be able to discuss the material together.

The **Selective Release** feature in WebCT allows faculty to take a proactive approach to teaching and learning. This tool enables faculty to release material to specified students in the course. Students who are not grasping the meaning of certain material can be given additional instruction to strengthen their knowledge and skills. Students who are excelling in the course may be given additional material to help them progress further instead of waiting for other students to catch up with the rest of the class. Students who are unable to access their course to meet assignment deadlines because of personal reasons or work schedules can be given make-up assignments. Exams can also be released earlier or later, etc., to help meet individual student needs without disrupting the course schedule.

Faculty can customize courses according to their own discretion. They can change the color of the background, the navigation bars, and the links. Banners, photographs, animated gifs, etc. can be added to the Homepage, Organizer Pages, Chat, and to quizzes and exams. WebCT offers a wide variety of icons and clip art for faculty to use in the Manage Files area, yet icons can also be customized. Faculty who are not interested in course customization can use a pre-designed template.

Additionally, WebCT offers faculty a variety of tools with diverse functionalities. Tool functionality should enhance teaching and learning. Blackboard's **Announcement** page, **Course Details** page, **Unit Information** page, **Handout** page, etc., are created with the content tool, which obviously can be used for various functions. WebCT uses different tools with specific functions: **Student Tips** pops up on the course homepage for announcements or tips; the **Syllabus** tool offers a syllabus template, or the designer can use a previously created file; the **Content Module** is set up like a table of contents, giving a structured outline of each lesson or the entire course; **Single Pages** can be added, which link directly to any file the designer adds to the **Manage File** area; **Organizer Pages** are used to create layers, allowing specific material to be separated from other general course material (for example an additional resource Organizer Page containing multiple PowerPoint presentations); **URL Pages** that provide direct links to URLs such as the instructor's WCU web page; plus other tools such as the **Glossary** and the **Image Database**.

Support Needs

WebCT support has existed on this campus for the past five years through Continuing Education and Summer School. At present, the support staff for WebCT consists of one Instructional Technology Consultant and one Application Programmer 1. Both positions provide WebCT administrative functions for the campus, plus the faculty and student helplines (through telephone and email). The Instructional Technology Consultant supports faculty in three types of consultation sessions: One-on-one support, online support, and small workshop sessions.

One-on-One Support. Faculty who desire one-on-one support have the opportunity to meet with an Instructional Technology Consultant for as many sessions as needed. Faculty will learn the course management software while working on their course content and course design. Our objective is to help provide faculty with a pedagogically sound course while making them feel comfortable with the technology used for online teaching. The technology should become invisible so faculty can concentrate on their course content.

Online Support. Knowing that faculty schedules are demanding, we have developed an online preparation course that allows faculty to learn the course management software, while experiencing online learning as a student. Faculty are also given their own course to simultaneously work on so they can begin applying the techniques they are learning. This course has been designed for a group of faculty to work together as students; however, faculty may take the course individually. After course completion, faculty can request one-on-one support to help with course design and content.

Small Workshop. Sessions Program directors have the opportunity to have their faculty meet together as a group in an electronic classroom to learn the course management software and to discuss best practices for online teaching provided by experienced online instructors. Exemplary courses are provided for faculty to explore. Program directors may request specific topic preparation sessions such as using "Student Presentations" or "Importing Excel Sheets in WebCT's Gradebook." Small workshop sessions help program directors generate faculty interest in teaching online.

Student orientations are also provided for all Distance Education programs. Continuing Education and Summer School has an ongoing collaboration with the Coulter Faculty Center, which provides pre-requisite training for online educators and instructional design consultation for faculty wishing to enhance resident courses. The Coulter Faculty Center also provides scheduled "Learning Opportunities" workshop sessions.

Learning Opportunities. The Coulter Faculty Center will offer learning opportunities for groups of faculty who are interested in learning how to web enhance their traditional classes. These sessions will be held in an electronic classroom and will take about 1 hour to complete. The sessions will be in a sequence to help faculty prepare their course materials for the web. Other sessions will include the basics of using WebCT, pedagogically sound models using WebCT, as well as, other related topics.

The support required to implement WebCT as this campus's course management system needs to be discussed. Some of the comments found in the Public Folder for the Course Management System Task Force have been included (*see below*).

Public Folder Comments

“The support structure (tech/admin and IT) that needs to be in place at any given campus seems to necessitate a multi-tier approach. Centralized technical and administrative support; same with content development, however, local support seemed to be a theme that was most influential in faculty needs accommodation. More than one institution mentioned on-call/office-call support which I think is a critical element, whether it is someone down the hall or dispatched from a group of ITCs centrally located on campus.”

“I am sure that everyone involved with supporting courseware on this campus has worked hard and conscientiously. However, the problem of support is more complicated. One issue is its placement. I mentioned a model, popular in some schools, in which some department faculty receive special training and reduced loads to assist their colleagues. These faculty would supplement the centralized support Western already offers. Their convenient location and knowledge of their discipline’s special curricular issues would encourage more people to adopt the courseware and understand the pedagogy behind it. We could discuss many such models. The point is, faculty need a voice in determining the support structure, which has too often be dictated to them.”

Detailed Comparison of Pedagogical Features

Mail. The Mail tool is self-contained in WebCT, whereas Blackboard uses a “push system” which allows local email accounts linked inside of course. Both allow for attachments. Having an internal email system in the CMS keeps contents well documented in a course, and cuts down time-on-task since email can be found in one location. This is discretionary, since some faculty may prefer campus email, or no email, in the course.

Discussions. The Discussions (bulletin boards) tool in Blackboard allows the student to delete postings, whereas WebCT only allows the designer (instructor) to delete postings.

Chat room/Whiteboard. Blackboard’s Virtual Classroom is a chat room and a whiteboard combined. It allows the designer and students to bring in course content to discuss, draw on, etc. Blackboard also allows the designer to create multiple simultaneous Virtual Classrooms, which can be archived (recorded). WebCT did not combine these tools, however, a chat session can be opened while using the whiteboard. WebCT limits designers to four recorded chat rooms and two unrecorded chat rooms. A third party tool, Centra (synchronous audio chat/whiteboard), can be used in lieu of Blackboard’s Virtual Classroom and WebCT’s chat room and whiteboard.

Assessment. The Assessment tool in WebCT allows for criteria-based selective release, whereas Blackboard does not allow for selective release. Availability breaks down into days, hours, minutes, and “unlimited.” Blackboard’s availability breaks down into hours and minutes only. The selective release tool allows designers to reach underachievers and overachievers with assessments tailored to their specific needs, which can be hidden from the other students. WebCT also has an ongoing timer displayed while students take the assessment, and it allows for designers to customize background/text colors to prevent student printing. Blackboard does not allow color customization due to Section 508 compliance. Blackboard does not all for IP recognition security feature, whereas WebCT does.

Dropbox. The Dropbox tool in WebCT sends automatic email notification to the student (sent to personal email account) stating that their assignment was received. Blackboard displays a receipt. Both are adequate if they prevent students from contacting their instructors to check to see if they received student assignments (cuts down faculty workload).

Tracking. The Tracking tool in Blackboard uses statistics as well as graphs and charts. Blackboard allows the designer to apply tracking feature to individual areas, but not all areas. WebCT uses statistical information only and does not break down tracking areas as completely as Blackboard, such as in discussions boards.

Gradebook. The Gradebook tool in WebCT allows for more flexibility in weighing of grades, and each column contains release criteria. Excel can be imported into both CMS's.

Copying course material

Course material can be copied from one course section to a different course section in Blackboard. WebCT can only do this through an initial course duplication; new course material will have to be uploaded or WebDAV can be used. Copying course material from course section to course section seems advantageous to faculty teaching multiple sections of one course.

Uploading course material. The ease and flexibility of uploading course material is crucial to online educators. A typical Master of Project Management course contains over 200 files. Blackboard relies on templates to insure ease of use for designers. Christy Slifkey, Blackboard Managing Consultant, analogizes Blackboard to a piece of Tupperware -- acts as a "holder" that does not change what designers put in it. To add any type of course content, whether an .html file, .ppt file, an image file, etc., the designer fills out a three-step template for each file. Therefore, a designer in the Master of Project Management Program would have to fill out over 200 individual templates to upload their course material in Blackboard.

In WebCT designers can upload all of their course material to a storage area, Manage Files, in three ways: uploading individual files, uploading zip files and then unzipping them within WebCT, and by using WebDAV. WebDAV offers designers drag and drop file management. This means that the designer does not have to upload files individually or by zipping and unzipping. A folder is created on the designer's hard drive, which mirrors their Manage Files area of their course. Folders and/or files can be brought into this folder by dragging and dropping from anywhere on the designer's hard drive or from a disk, etc. The designer can then organize their course material by dragging and dropping into various folders within the mirrored Manage Files folder. The designer can plan out their entire course curricula in the Manage Files area. This helps the designer plan a pedagogically sound course and saves time on the task at hand. With Blackboard the designer has to upload each file individually to the content tool. *Blackboard representative Ed Tola said that Blackboard would help us achieve any feature that WebCT offers through the use of Building Blocks, etc.*

Editing course material online. The designer needs to edit their course material online (from within their course). If designers are not able to do so, then they will have to download their material, edit it, then re-upload the material to their course. WebCT enables designers to edit their material while in their online course. The designer needs to use Netscape as a browser since it will open the .html files in Composer. This saves the designer time-on-task, especially if they are at home using a dial-up modem. Blackboard does not offer this functionality, but it suggests the use of "AOI WYSIWYG Editor For Blackboard 6.0 (VERSION 2.0!). This Building Block [*see below*] is priced at \$2,499 USD. This entitles you to all upgrades of the 2.x version that are released."

Tool functionality. Tool functionality should enhance teaching and learning. Blackboard's Announcement page, Course Details page, Unit Information page, Handout page, etc., are created with the content tool, which obviously can be used for various functions. WebCT uses different tools with specific functions: Student Tips pops up on the course homepage for announcements or

tips; the Syllabus tool offers a syllabus template, or the designer can use a previously created file; the Content Module is set up like a table of contents, giving a structured outline of each lesson or the entire course; Single Pages can be added, which link directly to any file the designer adds to the Manage File area; Organizer Pages are used to create layers, allowing specific material to be separated from other general course material (for example an additional resource Organizer Page containing multiple PowerPoint presentations); URL Pages that provide direct links to URLs such as the instructor's WCU web page; plus other tools such as the Glossary and the Image Database.

Flexibility. Each CMS demonstrates different types of flexibility. Blackboard allows the designer to replace various tools with third party tools or the designer's homegrown tools. For instance, if the designer needs a more efficient grading program, Blackboard's grading tool can be substituted with a Building Block. Blackboard's flexibility lies in its ability to add and subtract from its product. WebCT offers the designer flexibility from within the CMS. The designer has greater flexibility in the design of the course material and in the formatting by which it is delivered. The designer has a larger selection of tools with different functionalities to enhance their course material. WebCT also offers the designer flexibility in page customization. Homepages, Organizer Pages, Assessments, Content Modules, and the initial Chat Room pages can be customized. Customization involves changing the color of a page's background, navigation bars, adding banners or background images, adding upper and lower textblocks, adding a hit counter, and changing icon styles. Links can also be added/removed from the MyWebCT page to notify students of content additions to the following course tools: Dropbox, Calendar, Discussions, Mail, Assessments, My Grades, and Survey. This saves the student time since he/she does not have to enter the course to see if new content has been added. Designers have content addition notification links on their MyWebCT pages too.

Courseware Enhancements or Blackboard Building Blocks. Blackboard relies on third party companies, called Blackboard Building Blocks, to enhance its CMS.

Blackboard Building Blocks makes e-Education more accessible and customizable for all institutions. The idea of Building Blocks originated in December of 2000 at Blackboard Inc. Since then, Blackboard has devoted a great deal of effort in transforming the Building Blocks vision into a reality. Building from use cases, industry standards, and open source ideologies, Building Blocks promises to bring e-Education to the next level.

Some of the Building Blocks are free and some have to be purchased (either campus-wide or individual licensing is available). Building Blocks can be placed in a template for all faculty. Though these features could make Blackboard much more flexible, they cause new concerns:

- How much additional cost is involved?
- How long will each third-party company be around to guarantee their product?
- When Blackboard updates its software will it still be compatible with third party products?

WebCT allows us to retain many of the same features without having to rely on third-party vendors.

Navigation. WebCT and Blackboard have similar navigation systems: a navigation bar on the left that can be hidden and a navigation bar across the top of the page called Breadcrumbs. Both CMS's step out instructions 1, 2, and 3 for the user.

BlackBoard 5.5		WebCT 3.8 Campus Edition
Learner Tools		
> Communication Tools		
Discussion Forums	Discussion forums can be viewed by date and by thread. Posts can be either plain text, smart text or html. Instructors can enable or disable anonymous postings, file attachments, and creation of new threads by students.	Discussion forums can be viewed by topic, by date, and by thread. Instructors can enable or disable anonymous posting and file attachments. Posts can contain a URL. Instructors may create separate discussion environments for small groups of students and teaching assistants.
File Exchange	Students can submit assignments using drop boxes.	Students can submit assignments using drop boxes. Students can upload files to a shared group folder.
Internal Email	Students must have an Internet email address. When students use the internal email tool they can send messages to individuals or groups.	Students can email individual students, instructors or groups. The internal email system supports searching and attachments. Students can elect to forward their mail to an external address.
Online Journal/Notes		Students can attach notes to any page. Students can combine their notes with the course content to create a printable study guide.
Learner Tools		
> Productivity Tools		
Bookmarks		Students can create bookmarks in a private folder.
New User Orientation	The system includes an online student guide.	The system includes an online student guide.
Resume Course function		Upon re-entering a course, the student has the option to resume at the last page viewed.
Searching Within Course		Students can search all course notes, discussion threads, and email subject lines in their course.
Self-progress Review	Instructors can post course-related events and announcements in the course calendar. The instructor can assign tasks by using the calendar and the instructor can enable an option so that the student can check their status at any point in a course.	The system includes tools, which allow students to view their progression through course readings and activities and current grade information. Instructors, students, and teaching assistants can post course-related events and announcements in the course calendar.
Work Offline/Synchronize		Students can collect and download the entire course content for offline study.
Learner Tools		
> Real-time Tools		
Application Sharing		Students can use the presentation tool to share files and co-edit them in order to publish group projects.
Group Web Browsing	The whiteboard feature of the software supports group browsing of web pages as whiteboard slides.	
Real-time Chat	The chat tool includes: private rooms, and the instructor chat tool supports responding to structured questions submitted by students.	The JAVA chat tool includes: one campus wide room and 4 private rooms. The chat displays a list of students in the chat and provides a text box displaying the conversation as it progresses. Students who join late cannot view the prior conversation. The chat is archived and Instructors can view chat logs for student assessment.
Video Services		Streaming media can be embedded in content without knowledge of HTML, but the software does not include a streaming server.
Learner Tools		
> Student Involvement Tools		
Groupwork	The software supports assigning students into groups by the instructor. Each group can have its own shared group folder, private group discussion forum, synchronous tools, and group email list.	The software supports assigning students into groups by the instructor or by random. Each group can have its own shared group presentation folder and private group discussion forum.

	BlackBoard 5.5	WebCT 3.8 Campus Edition
Self-assessment	The software can create practice tests that use the following types of questions: True/False, Fill in the Blank, Matching, Multiple Choice, Multiple Select, Ordering, and Short Answer/Essay. Questions can be imported from existing test banks or can be both built with the tool. The software can provide feedback; reveal detailed results and correct responses on a per question basis. Instructors can also create self-assessments that allow multiple submissions.	Students can take practice tests and anonymous surveys integrated with course content and can get instant feedback that does not count toward a grade. Students can use the Mathematics Markup Language equation editor to enter and edit mathematical notations.
Student Community Building		The system also supports a system-wide chat room where students from different courses can interact. Instructors can create a student lounge within a course shell. The optional Campus Pipeline campus portal product also provides an online community center and allows students to create online clubs and study groups.
Student Helpdesk	Students have access to a student manual and to the product knowledge base and the product reference center.	Students have access to online help for the discussion forum and for the internal e-mail as well as small helpful descriptions for the other tools.
Student Portfolios	Students can create a personal homepage in which they can upload their picture add bookmarks and other personal information.	Students can create a personal homepage with a software tool that does not require them to know html.
Support Tools		
> Administration		
Optional Extras	The Building Blocks initiative is an attempt to create a community of developers who can provide API-integratable applications to enhance the functionality of the system. Current applications include WYSIWYG web page editors, DAV file transfer mechanisms and a toolkit for science courses (e.g. MathML editor).	WebCT Campus Edition is licensed in two variants: Focus License and Institution License. The Focus License allows a subset of the functionality included in the Institution License, and restricts the number of student seats, and eliminates access to APIs that allow integration with campus systems such as student information systems, portals, and authentication systems. The company offers consulting services for implementation planning and advanced technical services including an initial technical assessment and evaluation of issues such as authentication, load balancing, and migration and upgrade planning. Premium services are available for quicker response time, direct access, and 24/7 support. The company also offers customized training.
Registration	Students can self-register as an option. The instructor can add students to the course and use batch import from a text file.	The administrator can add students to the system. Once students have been added to the system then instructors can add them to the various courses or allow students to self-register as an option. The software includes optional out-of-the-box integration with SCT Banner and Campus Pipeline or customized integration with other SIS or portal systems.
Secure Transactions		The system provides support for Secure Socket Layer transactions to pass user logon information, user password changes and hint, and administrative interface access.
Support Tools		
> Curriculum		
Course Layout Templates	The software provides a way to categorize and file course content as one of the following system supported types: Course Documents, Student Resources, Field Trips, Instructor Resources, Chapters, Units, Teacher Tips, Resources, Lecture Materials, Supplemental Materials Handouts, Lecture Supplements, Lecture Notes, Course Packet, Modules, Presentations, Animation Library, Image Library, Practice Tests, Exercises, Additional Materials.	The software provides support for template-based content creation that walks instructors through a step-by-step process to set up the essential features of a course.

	BlackBoard 5.5	WebCT 3.8 Campus Edition
Customized Look and Feel	The system provides a dynamic architectural component, which enables seamless integration of tools, content, and commercially licensed or homegrown applications. The system supports digital course cartridges that are available from many publishing companies.	The system supports using alternate image libraries to enable branding and customizing the look and feel at both the site level and the course level.
Instructional Design Tools	The software provides learning unit structures that enable instructors to create sequential learning paths. Instructors can create annotated and categorized bookmarks for their courses. They can also specify if a bookmark link should open in an external window.	The software includes templates for the construction of various kinds of standard pages including course outlines, assignments and recommended reading lists. Instructors can upload documents to the server using drag and drop through WebDAV. Instructors can create bookmarks for specific courses.
Support Tools		
> Instructor		
Automated Testing and Scoring	The testing tool can create assessments that use the following types of questions: True/False, Fill in the Blank, Matching, Multiple Choice, Multiple Select, Ordering, and Short Answer/Essay. Questions can be imported from existing test banks or can be both built with the tool.	The testing tool can create assessments that use the following types of questions: Multiple Choice, Calculated Answer, Matching, and Short Answer/Essay. Questions can be imported from existing test banks or can be both built with the tool. The Mathematics Markup Language equation editor can enable students to enter and edit mathematical notations. The testing tool can support timed test submission and completion, with a range of delivery options, including support for proctored exams. The automated scoring can score multiple choice, matching, calculated and short answers type questions with optional immediate feedback.
Course Management	Instructors can selectively release materials based on specific start and end dates.	Instructors can personalize access to specific course materials based on group membership, previous course activity, or student performance. The system can synchronize with course dates defined by the institutional calendar.
Instructor Community Building		The system provides access to an e-learning hub where instructors may share information in a number of discipline-specific or general interest forums.
Instructor Helpdesk	Instructors can access the instructor manual, the product knowledge base, and the reference center. Instructors can contact the technical support if they have been issued an institutional account to do so.	Instructors can access the full online context-sensitive help, which is also available as a separate manual. Instructors can access the online tutorial to help first-timers and an instructor mailing list.
Online Grading Tools	Instructors can use the gradebook to view the grades by item, by user, by full spreadsheet view, and also to export a comma-delimited text file for import into an external spreadsheet program.	Instructors and teaching assistants can mark paragraph questions, and mark assignments turned in through the assignment dropbox online. Instructors can use the gradebook for basic statistical analysis and final grade calculation. The grade book supports the creation of custom columns.

Figure 4: Detail of Pedagogical Features

Financial Considerations

In response to its charge, the CMS Task examined the costs associated with support of the course management systems.

The current license fees will go up when renegotiated for 2003-04, but it is not known at this time what the differential between the products will be. At this time, WebCT has an advantage in ease of integration with the University's SCT administrative systems. However, industry analysts are projecting that within 6 months SCT will support both Blackboard and WebCT integration in equivalent solutions. It is less certain that integration with Campus Pipeline, the third major component of Western's architecture, will

be as easy for both programs. The fact that Campus Pipeline is now owned by SCT suggests that it will be, although Campus Pipeline and Blackboard are competitors in the portal market.

In spring 2002, WebCT released Vista, a new “premium” course management product. Some early reports indicate that Vista can lead to substantial savings if implemented across multiple campuses. Although this scenario is highly speculative at this time, it is worth noting that Western’s two nearest UNC campuses, UNC-Asheville and Appalachian State University, use WebCT. Western already collaborates with these campuses in a shared library system and in disaster recovery planning. The three campuses are working together in a regional collaborative for the SCT Banner implementation, and the three CIO’s are exploring various ways to gain efficiency through regional cooperation. By continuing to use WebCT, Western Carolina University may enjoy some future cost benefits from these relationships.

Even though this changing environment makes precise cost projections impossible, the following table probably represents system support requirements reasonably well. Because the software license itself is a relatively small part of the total support cost, the task force did not consider product price as a major factor in its recommendation.

	Blackboard	WebCT
Campus-wide Licensing		
UNC contract price	\$45,000 ^a	\$18,500
Licensing Subtotal	\$45,000	\$18,500
Hardware		
Server, primary	\$2,577	\$2,577
Server, secondary	2,577	2,577
Hardware Subtotal	\$5,153	\$5,153
Support Staff		
CMS administrator ^b	\$37,270	\$37,270
CMS content manager ^b	46,331	46,331
Basic hardware/software ^c	12,300	12,300
Interface design/programming ^d	27,532	27,532
Faculty training/coaching ^e	107,000	107,000
Help Desk staffing ^f	20,230	20,230
Support Staff Subtotal	\$250,663	\$250,663
Total Annual Cost without Integration	\$300,816	\$274,316

Figure 5: Estimated Annual Expenditure

^a Includes Blackboard Community Portal, similar to functionality of Campus Pipeline; without Community Portal cost is \$40,000, but portal may be needed for full functionality desired by WCU.

^b Such as the positions currently in Office of Continuing Education & Summer School (2 FTE).

^c Provided by networking services & other central IT staff (1/2 FTE network server specialist).

^d Provided by central IT programming staff (1/4 FTE applications analyst programmer).

^e Instructional technology consultants such as those in the Coulter Faculty Center (2 FTE).

^f Computing Consultant 1 position (1/2 FTE per platform).

Integrated with SIS+ Costs: WebCT Only

Integration Cost-1st year		
SCT Plus Connection	\$33,000	
Mercury Messenger	\$7,000	
Software license total		\$40,000
Installation		\$37,800
Software Maintenance		\$3,600
Total System Integration Cost (one time)		\$81,400
Total Annual Cost with System Integration (Total Annual WebCT, plus integration software maintenance)		\$304,416

Figure 6: Estimated Integration Costs

Technical Issues

The Technical Sub-committee was charged with responding to charge items 3.2 and 3.5, which involve analysis of interfaces, compatibility, and technical support issues.

The Technical subcommittee was asked to analyze interfaces, compatibility, and technical support issues. This section addresses items we concluded were most critical for this summary.

Relationship of the CMS platform to the university’s technology infrastructure

The integration issue evidence indicates that both vendors could work with other campus systems, including Campus Pipeline and SCT. Information presented by WCU’s Information Technology representatives reached the same conclusion (see questions #1.0 through 1.8 in the Technical Questions Appendix). Integration with Blackboard would require the development of a custom set of computer code that Blackboard would help to integrate. At this time, WebCT has an advantage in ease of integration with the university’s SCT administrative systems. Once implemented, both offer real-time integration.

Implementation and support of the platform

Western currently has over 230 courses that have been built in WebCT. The evidence suggests that converting WebCT courses to Blackboard courses would take a significant amount of time. In conversation with Blackboard representatives, they indicated that their conversion tools would perhaps convert just over half of the course text and features automatically. The rest of the work would have to be done manually.

From the videoconference we learned that no matter the size of the campus, every campus has between 1 and 2 FTE dedicated to CMS server maintenance and support. These personal were generally part of the university-wide IT team. FTE for varied widely among campuses for instructional CMS designers, but most campuses provided offices for the CMS designers in various schools and colleges of their campuses. The most important issue that emerged from these discussions was the need for quick response to technical and understanding course features issues.

Longer response times were acceptable for addressing more general issues of curriculum and information presentation.

The table below shows how each product handles some of these technical issues:

BlackBoard 5.5		WebCT 3.8 Campus Edition
Technical Specifications		
> Hardware/Software		
Apple Server		
Server Requirements	For a small (less than 3000 simultaneous student accesses) installation, the recommendation is either a 2 CPU Ultrasparc II 450 MHz or 2 CPU Pentium III 800 MHz, with 2 GB RAM, and either the Apache or IIS web server. Hardware specifications for larger installations are available on the product website.	The suggested minimum processor hardware requirements are:(Intel) Single 1 GHz Pentium III processor or (SPARC) 2 x 750 MHz Ultra Sparc III processors. The suggested minimum processor hardware requirements are: 2GB of RAM, 72GB of disk space in a hardware RAID-1 or RAID-5 configuration.
Unix Server	Both Solaris 2.8 and Red Hat Linux 6.2 versions are available.	Red Hat Linux for Intel libc6 6.2,7.1, 7.2 and 7.3, and Sun Sparc Solaris 7 and 8
Windows Server	The software can run on Windows NT 4.0, Windows 2000 Server or Advanced Server	Microsoft Windows 2000 Server SP2 or Windows 2000 Advanced Server. (Note: Because WebCT 3.8 uses a newer version of Perl - v. 5.6.1.- the software cannot be installed alongside versions earlier than 3.7 on the same Windows server.)
Technical Specifications		
> Pricing/Licensing		
Company Profile	Founded in 1997, Blackboard is privately held by a number of venture investors, media and technology companies. Over the years it has acquired CourseInfo, Web-Course-in-a-Box, and Prometheus course management systems.	WebCT began as a project by a University of British Columbia professor Murray Goldberg to provide an online learning tool for his students. It was then shared widely across the internet as a freely available product. In 1999 Universal Learning Technology (ULT) acquired WebCT and the software was released as a commercial package. WebCT is a privately held company backed by a group of investors, which include CMGI@Ventures, JPMorgan Partners, SCT, and Thomson Corporation.
Ongoing Costs		The Campus Edition Institution License is based on number of full-time equivalent (FTE) students for the institution. The Campus Edition Focus License is based on a limited number of student seats (normally 3000).
Open Source		
Software Version	The software is version 5.5	The software is version 3.8.
Start-up Costs		The software is priced based on the number of students.
Technical Support Costs		Technical support is available via web form, email, or telephone. Technical support is free to two administrators per license and available for an additional fee to instructors or additional administrators. Additional support services with four-hour response time and 7x24 Support options are available at additional cost.
BlackBoard 5.5		WebCT 3.8 Campus Edition
Technical Specifications		

> Standardization		
Accessibility Compliance	The software implements ADA Section 508 compliance by providing alt tags on all system images; a tool for instructors to add alt tags to uploaded images; appropriately titled framesets with meaningful (noframes) content describing the functionality of the frames layout; and data tables that are optimized for use with screen readers. Extensive documentation on general layout of the software orients students and instructors employing assistive technologies. Many of the features have been designed to work with the JAWS screen reader technology.	The software implements ADA Section 508 compliance by: providing a text equivalent for every non-text element and meeting other requirements. Both the chat tool and whiteboard tool are navigable by keyboard. The high contrast color scheme can be the default or overridden by users. The invisible navigation links can be used by screen readers. The accessibility is optimized for the following assistive technologies: JAWS 4; Browser: Internet Explorer 5.5 SP2; Operating System: Windows 2000.
	BlackBoard 5.5	WebCT 3.8 Campus Edition
Migration Considerations	The software provides tools for platform and content migration to enable upgrades from any previous version of the software.	The system supports migration by importing and exporting IMS compliant courses.
Technical Specifications		
> Technical Administration		
Authentication	Level 1 authenticates against a stand-alone database of users. Higher levels provide for LDAP or Kerberos-based authentication.	Software supports Secure Sockets Layer protocol (SSL) allowing requests from the following areas to be authenticated via a secure server: user logon, user logon hint, user password changes, administrator interface, and the helpdesk interface. Added security features for online assessment include support for IP subnet masks, proctor passwords, and the selective course section access to individuals based on multiple criteria. Administrators can set password length restrictions and require password changes after the initial logon and after a specified period of time. With the Institution License, the system supports authentication with LDAP or Kerberos repositories out of the box. Administrators can also set up fail-through authentication, so if a user fails to authenticate against a primary source (ex. LDAP), the system will try a secondary source (ex. The system's own internal user database).
Course Authorization	There are a number of standard access roles (student, instructor, teaching assistant) with associated privileges. In addition, course sections can be made 'unavailable' during development and group areas can restrict access to only group participants.	Each user is assigned a role as student, teaching assistant, instructor/designer, or Administrator, with appropriate access to tools, functions and information.
Database Requirements	The system software includes the required MySQL database software.	
	BlackBoard 5.5	WebCT 3.8 Campus Edition
Hosted Services	A hosted service is available that provides	There is both a standard and premium hosting option

	managed software installation, 10 to 20GB storage space, 256 to 512Kbps bandwidth usage, redundant Internet connections, redundant and conditioned power, 24x7 monitoring, nightly tape backups, and a secure facility.	for the system with guaranteed system availability and performance. The standard option provides a standard interface to the system, while the premium option provides a customized interface using an institution's branding. The premium hosting option is a co-managed solution that includes access to select administrative functions to make system modifications on an as needed basis. Both options include: basic support for two on campus contacts, initial creation of courses, initial loading of student information, and system administration services.
Integration with Student Information System	The software (version 5 Level 2 and higher) supports data interchange with student information systems through an event-driven API or through their tool, which is based on scheduled system extracts.	With the Institution License only, the software complies with the IMS Enterprise Specification (Student Data) API and enables integration with IMS compliant student information systems. The system can accept course creation records, student records, and student enrollment records. The system can send mid-term and end-of-term grade information to the student information system. Cross-listed courses are supported.
Server Administration		Most installations are performed by local administrators. Optional, for-fee consultation is available. The software's administrative interface provides for usage information such as disk usage per course and number of student accounts per course. The administrative interface is all web-based. The software supports local backup of a course to the desktop machine for archival or crash recover purposes. Archived courses can be restored to overwrite another course.

Figure 7: Detail of Technical Comparison

For detailed technical information, please see **Appendix B and C: Questions for WebCT and Blackboard.**

CONCLUSIONS AND RECOMMENDATIONS

Western should adopt WebCT as its only Course Management System

Faculty responses indicate an overwhelming preference among experienced users for WebCT, primarily because of its power and because so many have already expended so much time and effort to learn it. Blackboard did not have any features attractive enough for the committee to override this preference, and newer versions of WebCT have factors that make it far more attractive to seasoned users. WebCT is also easier to integrate and, because most of its features are available without partnering with other vendors, it may ultimately be far less expensive to maintain and support.

A key strength to Blackboard, one cited by several dissenting faculty and four other UNC institutions, is that faculty perceive it to be far more accessible and user-friendly. Representatives from Chapel Hill said that changing to Blackboard helped them increase their online offerings from 50 to 1,000 in a very short time, and the CMS Task Force considers increasing faculty involvement to be one of its key goals. Though the committee believes newer versions of WebCT are equally accessible to new users, WCU cannot successfully integrate WebCT without addressing this perception.

Recommendations for Implementation and Support

Western needs to find ways to dramatically increase faculty involvement.

For distance learning to prosper and increase enrollment on this campus, faculty must see the advantages of the course management system we choose. If the university follows the task force's recommendation and implements WebCT, we should take care to emphasize recent improvements to that program that make it easy and accessible to novice users. We suggest

- Creating templates that help faculty integrate the software into their teaching not only easily but wisely
- Stressing its advantages over current campus solutions such as the Appserver class folders
- De-emphasizing, for this audience, the program's complexity and choices, and designing a simplified interface to introduce new faculty to the program.
- Offering incentives and release-time for faculty using the program for the first time
- Introducing the program to faculty gradually, and only after IT restructuring has taken place
- Emphasizing the advantages of CMS rather than threatening reluctant faculty

Faculty favor a multi-tiered support structure

Faculty have not always felt involved in IT decisions made on this campus. They will be reluctant to embrace any program if they do not see clear pedagogical advantages. Many felt the recent IT restructuring plan was developed without their input. In contrast, many faculty felt closely involved in the CMS task force's decision process. We hope WCU will use a similar process to restructure IT support.

The article **Appendix I: Open Course Ware: A Case Study in Institutional Decision Making**, appended to this report, is an inspiring example of how faculty-driven IT decision-making can revolutionize a university. We suggest

- Involving faculty at every level of the support-restructuring process
- Creating department-centered support rather than centralized classes
- Following the UNC IT Division's guidelines in creating a Teaching and Learning with Technology (TLT) center as a bridge between the IT division and the Faculty Center

WCU must strive to safeguard academic freedom

The wide use of CMS holds great promise as well as many potential pitfalls. To ensure that WCU keeps its SACS accreditation and avoids censure from the AAUP, we must treat online and web-enhanced courses as classrooms, not commodities. We must ensure that faculty, not administrators or technicians, retain ownership of curriculum and instruction. We suggest

- Creating a faculty-driven task force to revisit issues of intellectual property and academic freedom
- Creating a special Faculty Senate Committee, Subcommittee, or Task Force to deal with such issues

APPENDICES

Appendix A: Technical Issues Under Consideration

1. How many staff support the CMS operation and how many faculty do they support? The video-conference would be a good place from which to get this answer.
2. What are the specifications on the speed of servers running the CMS software? What are the recommendations for comparing CMS software running on servers?
3. What is the reputation of online technical support? Scott and I are considering calling two CMS technology administrators for each platform within the state system.
4. How long is the online wait in calling for technical support? The video-conference would be a good place from which to get this answer.
5. What is the general responsiveness and accuracy of the answers of the online tech support folks? The video-conference would be a good place from which to get this answer.
6. Is there an Archive Inactive Courses function and are there any problems or issues with it?
7. Can one download grade data to Excel and upload grade formulas (such as for weighted grading) from Excel?
8. Is there drag and drop (WebDAV) in the current version?
9. At what point would WCU need more than one server? Is there a system for managing load balancing across servers?
10. Is there a fail-over of servers?
11. How is security and file integrity handled?
12. What are the features of the student tracking system?
13. What features do faculty use most often?
14. What features use the greatest amount of their time?
15. What provision are there for PDA or handheld computers? Will the system work with both Palm and Microsoft PDA operating systems? Are there any PDAs for which the software will not work?
16. What are the compatibility issues with the current version and Linux, Mac (8,9 and 10 versions) and Windows variations (2000, XP, etc.) operating systems?
17. As the WebCT or Blackboard-Pipeline connection continues to develop, will there always be a way to go directly to to the CMS software without going through Pipeline?
18. In what way can CMS email interface with existing campus email systems?
19. What alternatives for live dialog are available or being planned besides text chat? Voice?
20. Are there simplifications for threaded discussions? Students find tracking each others dialog challenging.
21. Others?

Appendix B: Questions for WebCT and Blackboard – Answered by WebCT

WebCT has answered the following questions based on the product version that is available through the University of North Carolina system contract. This is WebCT Campus Edition, version 3.8.

1. **Integration with other university systems:** Western Carolina University has made a commitment to using SCT business systems (currently SCT Plus, with plans to move to SCT Banner) and to using Campus Pipeline. We also use Innovative Interfaces library software. We need to understand how your product will integrate with these other products to produce a unified environment.

Response: *Working together, SCT, WebCT and Campus Pipeline are providing, maintaining, and supporting the Connected Learning Solution, a product suite that integrates all major campus technologies, enabling colleges and universities to implement enhanced teaching and learning models. This alliance provides access to personalized information, online courses and other e-learning resources, administrative services, community information, and communication tools. The integration of enrollment information and online course systems, part of this Connected Learning Solution, gives faculty and students immediate access to an online course environment, synchronized in real time with SCT student information systems. Course information, such as a student's final grade, can be easily entered in the WebCT gradebook and automatically communicated to an SCT administrative solution, without the need for time-consuming downloads, administrator batch updates or re-entry of data. The Campus Pipeline™ Web platform provides single sign-on and visual integration for WebCT Campus Edition course tools as well as supporting visual/data integration provided through the SCT Connection for WebCT.*

The SCT Connection for WebCT offers the solution for real-time data integration between SCT Banner Student and WebCT. The connections bundle events, triggers, routines, extracts, and messages to provide dynamic, real-time integration between our partnered academic tools and the student information system.

By selecting the Alliance's exclusive and fully integrated, pre-synchronized solution, institutions can dramatically reduce the time to deploy new technologies. Our out-of-the-box, open integration tools and service sets fulfill the mission of the Alliance, plus help institutions enhance the learning environment, facilitate campus communications and build school communities. In short, the Connected Learning Solution enables institutions to combine technologies through a user-friendly, single point of access for all campus constituents. Combining information, systems, learning tools, online services, and communication tools, will improve student services, simplify and reduce the time to deploy technologies, and streamline administrative processes.

Integration with Library software and interfaces is discussed in section 1.8.

1.1. How do you support integration with these systems, in terms of timeliness, off-the-shelf solutions, or response to upgrades by any of the products? Please be specific about interfaces, additional products, or other customization required and whether they are available through your company or must be developed by our staff. Also, be specific about any costs for integration that would not be included in the price in your basic license agreement with the UNC system.

Response: *The WebCT-SCT-Campus Pipeline Connected Learning Solution Alliance is a product suite that integrates all major campus technologies, enables colleges and universities to implement enhanced teaching and learning models. This out-of-the-box product integration between WebCT, SCT and Campus Pipeline provides access to personalized information, online courses and other e-learning resources, administrative services, community information, and communication tools. The Alliance partnership serves the needs of institutions seeking to connect and integrate best-of-breed technology resources to streamline management and increase student convenience and services. By selecting the Alliance's fully integrated, pre-synchronized solution, institutions can dramatically reduce the time to deploy new*

technologies. Our out-of-the-box, open integration tools and service sets fulfill the Alliance mission and help institutions enhance the learning environment, facilitate campus communications and build school communities.

WebCT offers various integration services to assist campuses with their WebCT/SCT implementation. WebCT customizes the offering dependent upon the requirements of the institution. Costs range from \$2,400 to over \$15,000.

1.2. Is there an alternate path to log-on to your product in an integrated solution other than Campus Pipeline? The motive here is to prevent a single point of failure in CP.

Response: *WebCT Campus Edition has very flexible authentication capabilities. The application protects itself via a fairly standard access control mechanism based on userid and role-based permissions. Users are authenticated using a username and password. We support our own internal password database, as well as LDAP, Kerberos and Windows 2000 domain controller, and we support multi-mode authentication, making it possible to authenticate against multiple sources. WebCT Campus Edition also contains an auto-sign-on capability to integrate with a campus portal. After a user is authenticated, his access is controlled based on the role he plays in a course.*

Our relationships with Campus Pipeline™ and UPortal™ are examples of commercial portal integrations with WebCT. The Campus Pipeline Web platform provides single sign-on and visual integration for WebCT Campus Edition course tools, and also supports visual/data integration provided through the SCT Connection for WebCT. WebCT's uPortal Channel Utility facilitates the export of an XML Channel from WebCT to uPortal, allowing institutions using the WebCT Course Management System and uPortal to provide users with access to their WebCT course listings and campus announcements through uPortal. WebCT's uPortal Channel Utility also enables single sign-on between uPortal and WebCT, eliminating the need for students using both systems to enter multiple ids and passwords.

1.3. Will your product integrate with Campus Pipeline for secure log-on?

Response: *WebCT Campus Edition can be integrated directly with Campus Pipeline. The Campus Pipeline™ Web platform provides single sign-on and visual integration for WebCT Campus Edition course tools while also supporting visual/data integration provided through the SCT Connection for WebCT.*

1.4. Does your product have partnerships with SCT and CP for *continued compatibility* between your respective systems?

Response: *WebCT, SCT and Campus Pipeline are working together in joint planning to make appropriate decisions on how our releases jointly match one another to ensure continued compatibility among our products for the greatest support of our customers.*

1.5. Does your product allow grades to be published from the course management software to SCT by the instructor?

Response: *WebCT's exclusive partnership with SCT enables the exchange of person, course/section, term, and grade information between the systems, allowing for real-time transfer of grades from the WebCT system back to SCT Banner, with the benefit of synchronized, secure data. Please refer to question 2.10 for more information regarding the WebCT Gradebook Tool.*

1.6. Does your product allow grades to be published from the course management software to SCT by the instructor?

Response: Please refer to question 1.5 above.

1.7. What tool/method is used for importing/exporting data for registrations, drop/adds, student ID changes, grading, etc.?

Response: The WebCT Importer-Exporter allows administrators to easily bring in or export content and assessment information to WebCT classes in IMS Content Packaging 1.1, IMS Learning Resource Metadata 1.1 and Question & Test Interoperability 1.1 format. This support of the IMS standards for content and assessment allows schools to easily share course materials with other IMS-compliant software as well as the flexibility of importing IMS-compliant courses created outside the WebCT Campus Edition environment.

1.8. How does your product interface with the Innovative Interfaces library software, especially a link to course reserves?

Response: WebCT is currently able to support integration with library resources by participating in customer-requested Library Systems Integration Project-eReserves System, Library Catalog and Information Gateways. As well, WebCT's Professional Services Organization has been working with some key clients to facilitate integration of WebCT Campus Edition and WebCT Vista with some of the major Library Information System and Service providers including Endeavor, Talis, SIRS, Exlibris and OCLC.

The first step to achieving integration with library systems leverages the WebCT Custom Authentication Tool Kit, which enables authentication and authorization from WebCT Campus Edition into the library's supported authentication system. Seamless authentication can be achieved using WebCT services to offer a single-sign-on via a portal, using LDAP, Kerberos, WebISO, Shibboleth or Athens authentication services.

The following is a list of existing WebCT functionality that can achieve some library integration goals.

- Using chat to enable a Library Reference Desk session to be scheduled into a course.
- Using WebCT content, assessment and communication tools to introduce new students to the University Resources – e.g. "Intro to Library 101."
- Using the Resource tool to create, store and manage eReserves stores in WebCT or in a repository - via a URL
- Using templates to create a library resources "link" prominently on the myWebCT page, or store discipline-specific links to the library repository that can be available in every "new course" created from that template.

1.9. Please list at least three universities that have successfully integrated these products that can serve as contacts for us to explore these issues further.

Response: The following institutions are currently implementing the WebCT-SCT-Campus Pipeline Connected Learning Solution.

*Bradley Morgan, WebCT Administrator
Marshall University
Huntington, West Virginia
Bradley.Morgan@Marshall.edu
(304) 696-7113*

*Steve Breiner, Associate Director of Instructional Computing Services
Appalachian State University*

Boone, North Carolina
 (828) 262-6731
Breiner@appstate.edu

Deb Landis, Web Manager
 Mercy College
 Dobbs Ferry, NY
 (914) 674-7394 x 1035
dlandes@mercy.edu

Product Features

2.1. Will any advertising content be on your system?

Response: *WebCT does not include any advertisement content as part of the system. WebCT allows for branding at several levels, including the single log-on page, and the course site. Should a private community site be used in conjunction with the courseware, that site may also be multi-branded and co-branded. The server home is an HTML template, so it is 100% customizable; the “welcome page” is customizable via the application and has fields for branding - as do the content pages within the application. They will easily accommodate advertising banners and marketing information if so desired by the institution.*

2.2. Describe how your product aids in creating a pedagogically sound course.

Response: *WebCT is built to meet the needs of a diverse set of learners. The product was developed by a team under the direction of Professor Murray Goldberg at the University of British Columbia, as a tool that would allow other educators to build sophisticated Web-based learning environments without investing a lot of time or acquiring substantial technical expertise. Over the years, WebCT has continued to evolve, becoming a rich yet easy to use e-learning platform with tools created to support specific pedagogical outcomes.*

Pedagogical Freedom. WebCT was designed to be pedagogically neutral, under the belief that the course designer should be able to decide how to organize and present the course to maximize student learning. A course management platform should not compromise the integrity of the instructional design. In explaining why they were moving from Blackboard to WebCT, Indiana State University said, “[With Blackboard] instead of making the courseware fit the design of the course, the course would need to be designed to fit the courseware.”

Two of the most powerful tools that exemplify this are the Content Module and Selective Release features.

The Content Module is WebCT’s primary tool for organizing content and assessment tools into learning sequences, which gives the course designer control over how the content is released to the student. The Content Module tool allows instructors to insert, rearrange, and modify content in a sequenced, automatically linked path or navigation and enables course designers to arrange course materials into units that are accessible from the course. Content modules also allow an instructor to associate learning resources, such as multimedia elements, references, external web resources and quizzes, to specific content pages. This provides the instructor a way to present content and assignments in context, as well as allow students to explore material from multiple perspectives. Tracking data in WebCT allows an instructor to analyze patterns in how students move through content. These data can be used to assess the student or to evaluate the effectiveness of course design.

Any number of Content Modules may be created within a course site, and they may be set up for conditional or “selective” release – i.e., a student’s quiz results determine which Content Module appears next. In practice, scope of course content, rapidity of sequencing through the content, demonstration of

competencies, as well as time and date elements and students' names all may determine the release of content to particular students.

Selective Release is a critical feature in an e-learning platform because it allows instructors to release content, tools or exams to individual students or to clusters of students based on established parameters such as dates and student performance. This feature can be used to allow students to self-pace or to ensure that all students have the same access to content by releasing units on a timed basis. In fact, WebCT is the only platform that allows course designers to effectively guide a student's path through a self-paced course. Selective Release also enables instructors to release tools and assignments to students who require a challenge or remedial assistance. More detailed information about this feature has been provided in section 2.6.

Clearly, other tools such as the Communications Tools (Discussions, Chat, Whiteboard) may also be used in ways, which support other pedagogical styles to promote active learning. In addition, a fully searchable online community service ("Ask Dr. C") contains a topical Discussion forum that is moderated by an international group of experts, and this is available on the website. The "Ask Dr. C" service consultants are longtime members of the WebCT user community who extend their expertise and innovation to less experienced users. "Dr. C's" personnel span the globe; consequently answers to questions are provided around the clock. "Ask Dr. C" can be accessed at http://www.webct.com/ask_drc/.

2.3. Does your product allow the designer to edit HTML documents from within their online course, including linked documents?

Response: *A WebCT course consists of files (including HTML, text, and graphic files) that are used by the various tools within WebCT. Typically files for a course are prepared on a personal computer by the instructor. These files are easily uploaded from the computer to the File Manager, which resides on the WebCT remote server. Once the files are moved to the File Manager, they can be hyperlinked to various areas in the course. Files in a WebCT course are organized and stored in folders, and can be viewed by clicking on the file's title.*

The current release of WebCT includes a WYSIWYG HTML Editor. This capability is planned for the next major release of the Campus Edition product line (Spring 2003). Currently, it is possible to edit already uploaded files either directly in HTML code, or in plain text, with Netscape Composer. However, instructors do not have to know HTML in order to easily add hyperlinks, embed images, and add presentations or movies.

WebCT courses can be customized at many levels. From the system level, college colors and a logo can be established and "set" for all courses. Within individual courses, the color scheme can be modified as desired. Designers may also choose from 4 different styles of built-in icons, some with various color schemes, or use icons created outside WebCT. Banners, background colors, images, upper and lower text blocks, link appearances, and fonts may all be customized.

The following WebCT course appearance tools allow institutions to customize the visual interface for their requirements:

- *Set page colors*
- *Select navigation menus*
- *Specify the appearance of icons and links*
- *Add a hit counter*
- *Create a welcome page*
- *Choose the interface language (language modules may be purchased enabling the user to choose the language in which the WebCT interface is displayed).*

The designer can opt to use the default left-hand Navigation Bar to build a Course Menu of links for the course, or can hide the navigation bar completely. On the course level, navigation is not affected by customization. Courses created from a customized institutional template can have a consistent navigation style at the institutional, department, or instructor level. Content Modules, described elsewhere in this document, respond to the question of content organization.

2.4. Does each of your course management tools have a distinct function?

Response: WebCT Campus Edition provides a comprehensive set of flexible, easy-to-use, and pedagogically sound tools. These tools are organized by the institutional role and distinct function the tool was designed to support. The course designer has the option of providing access to the tool from the main toolbar or from the main page within the course.

The following table lists many of the WebCT Tools:

<p>COMMUNICATION TOOLS</p> <ul style="list-style-type: none"> Calendar Chat Discussion Email Foreign Language Support myWebCT gateway Collaboration Tools Student Presentations Virtual Space Whiteboard <p>ASSESSMENT TOOLS</p> <ul style="list-style-type: none"> Assignment Drop box Gradebook Quiz Self Test Survey <p>LEARNER TOOLS</p> <ul style="list-style-type: none"> Bookmarks Course Index Glossary My Progress Resume Session Searching Self Test Student Homepages Student Support Tutorial <p>TAKE NOTES</p>	<p>TEACHER TOOLS</p> <ul style="list-style-type: none"> Assignments Content Module Create Hyperlinks File Manager: Posting and Accessing Course Materials Instructor Tutorial Support Multimedia Content Selective Release Student Tracking <p>COURSE MANAGEMENT</p> <ul style="list-style-type: none"> Analyzing and Tracking Tools Course Management Exporting Grades Gradebook Importing Student Rosters Manage Students Manage Teaching Assistants Reports generated for tracking student time on task Track and maintain student records Track Students 	<p>TESTING FEATURES</p> <ul style="list-style-type: none"> Adaptive Testing Automatic Notification Countdown Clock Download of Data Import Commercial Test banks Import/Export Grades Mathematical Formats Multiple Grading Options Online Editing Override Grades Post Tests to the Server Question Value Assignment Randomization Recording Grades Reporting Features Restore User Position in Test Security Options <p>SELECTIVE RELEASE</p> <ul style="list-style-type: none"> Statistical Tools Student Feedback Test Creation Templates Time and Date Limits Username/Password
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Figure 8: WebCT Pedagogical Features

2.5. Does your product allow for a place to store the designer’s entire course content online?

Response: WebCT’s primary content storage area is the File Manager, which is unique to each course site. Content files of all types are placed within the File Manager, and the instructor/designer then selects the appropriate content file for use directly from the interface where the content would appear. WebCT’s File Manager does not alter the content format or C:\Documents and type in any way; files are readily uploaded and downloaded using built-in utilities. Once in the file manager, content files may be accessed from multiple points within the course site.

2.6. How extensive is your student release functioning (what types of criteria are allowed)?

Response: WebCT’s Selective Release is a critical feature in an e-learning platform because it allows instructors to release content, tools or exams to individual students or to clusters of students based on established parameters such as dates and student performance. This feature can be used to allow students to self-pace or to ensure that all students have the same access to content by releasing units on a timed

basis. Selective Release also enables instructors to release tools and assignments to students who require a challenge or remedial assistance.

Using Selective Release, the course designer may set release criteria for every element of the course content. In practice, scope of course content, rapidity of sequencing through the content, demonstration of competencies, as well as time and date elements and students' names all may determine the release of content to particular students. This allows an instructor to release content based on individuals or groups (such as TA's). The instructor can also release content based on performance so that the learning of the individual can be directed. The dates can be different for individual students. Several of these criteria can be used at once so that they can be directed for example at a student and then at his/her performance. Instructors have the ability to set time and date limits on exams. Also, as an additional security feature, an instructor may assign an IP mask allowing the exam to be released on a specific date, for a specific time, to specific students, in a specific lab. Tests can be timed and limited by time. Instructors have the ability to set student response time limits so that they will be notified if the students take too much time. When the time limit has been reached, the instructor can allow late submissions or choose to not allow late submissions.

2.7. How extensive is your student tracking functioning?

Response: *The Student Tracking Tool monitors the activity of the student in the course, including the rates of interaction with various pieces of the content. Student Tracking allows faculty to monitor how students are progressing through the course material. Faculty can see the pages within the content modules that students have visited. They can also view the number of times students have accessed other areas of the course, for example, Homepage and Organizer pages. Student Tracking also lets faculty make queries based on criteria for individual students or a subset of students.*

Instructors have the option of viewing student behavior and performance from several perspectives: WebCT's comprehensive set of analytical tools allow instructors to assess the capabilities of their students as well as the effectiveness of their own methods of assessment. Statistics can be gathered on a per student basis, a per class basis, or a per question/per exam basis. Statistics can be viewed in a variety of formats including, median, mean and average, or the amount of time a student spent on an individual question on a specific exam.

2.8. How can I drill down and determine individual student to page review tracking within the course web site?

Response: *The Page Tracking Tool allows the instructor to track how students are progressing through the course material. The instructor can see the course pages that students are accessing, how many times the pages have been visited, and the amount of time spent on each page.*

2.9. Describe the robustness of the test tool functions. Be sure to address the on-line test taking development, scoring and reporting features.

Response: *The WebCT Quiz Tool consists of a Quiz Bank, or centralized repository of questions, which can be accessed for each test or quiz in a WebCT course, and reused, stored and retrieved. Any type of multimedia may be integrated within exams including, links to the web and multimedia files such as audio, video, streaming, and jpegs. Automatic notification can be selected by the instructor so that students may see their answers and scores, or their answers + correct answers + scores, or no scores at all. All question types except the essay style are automatically graded. Multiple-choice questions can have one answer, multiple answers and weighted scores. Short answers can contain single or multiple answers, require ordering, provide a choice of correct answers, use delimiters such as "equals" or "contains," require ordering of answers, and use regular expressions for scoring. Matching questions can contain more answers than questions. WebCT also supports calculated questions. Our MathML-based Equation*

Editor allows WebCT users to type, manipulate, and edit mathematical notations in quiz questions and answers.

The Quiz Tool allows lecturers to create, organize and deliver secure online examinations and surveys that allow multiple question types. The exam can have numerous delivery, timing, security, and access settings to ensure that the correct student is taking the correct exam at the correct time in a secure environment. Security features include IP masks, question randomization, proctor passwords, calculation variables and individual question serving. Lecturers may release a quiz to only one student or those students he or she wishes to have access, for an added measure of deterrence against cheating. Exams may also be selectively released, base on a student's individual progress.

2.10. Describe the robustness of the student grade book functions (formulas, weighing of grades, selective release).

Response: *WebCT Gradebook is automatically generated in each WebCT course. Any time an instructor creates a quiz, a column in the Gradebook is automatically generated. Any time the faculty implements the Assignment drop box a column is automatically generated in the Gradebook as well. Faculty can also add various types of columns in the Gradebook so that they may manually insert other types of information and grades such as mid-term and final scores, notes, selection boxes.*

All question types other than essay are graded automatically and entered automatically into the grade book for review; essay questions require direct lecturer assessment, and the grade is added to, and calculated within, the Gradebook automatically.

The Gradebook is characterized by its spreadsheet-like flexibility for organizing and managing information. Instructors have the option of viewing a section or groups of students within a section and have the ability to change and manipulate information as necessary. Users can create customized views of the Gradebook with an easy-to use customization wizard.

The Gradebook displays student records in a table. Names are stored in an alphanumeric column, and a final grade can be stored in a calculated column. An instructor can select the column type when creating a column, can convert an existing column to a different type, or merely suppress a type of column if desired. An instructor has access to both detail and summary item statistics for single or multiple exams, assignment submissions, and assessment results, etc. Instructors enjoy a great deal of flexibility with this tool and can use it to do such things as manually change a grade, override calculated grades and assign specific graders to an assigned task.

Through the Gradebook Tool, class rosters and grading information can be imported to and exported from the administrative system. Gradebook data can be easily imported or exported from a spreadsheet. Selected or comprehensive records can be transferred to either a local spreadsheet (such as Excel) or simple database on an instructor's desktop, or records can be transferred via the product's API to the student information system (centralized database).

WebCT's exclusive partnership with SCT enables the exchange of person, course/section, term, and grade information between the systems, allowing for real-time transfer of grades from the WebCT system back to the SCT system, with the benefit of synchronized, secure data.

2.11. Does your student grade book allow for the automatic sending of email?

Response: *With WebCT, students do not have to wait for email to be notified about their grades. WebCT contains several instruments for empowering students to evaluate their own progress. The WebCT My Grades tool allows students to access student areas of the Gradebook. Instructors can release columns in the Gradebook as they see fit. This allows students to see how well they are doing in their course as they*

proceed through the course. Instructors often choose to show daily assignments and weekly quizzes, but restrict access to mid-term and final exams. The information shown is limited to the individual student's data (i.e. students do not see the entire class roster). Instructor comments to students are most typically supplied through separate, individual emails from instructor to student. Email for each student can be accessed directly from the Gradebook.

WebCT contains an internal proprietary email system, or Private Mail for each course. By being course-internal, all course-specific messages are consolidated into one area, as opposed to their being scattered (or lost) among mail in other accounts. Another benefit lies in the preservation and coherence of course records. Since WebCT email is internal, it is all contained within the course environment and can be archived in its entirety (along with every other element of the course) upon course back up at the end of the term, maintaining the original structure of the folders. Alerts in the myWebCT (see below) area tell instructors and students when they have any new email.

Although WebCT's Private Mail is course-internal, the WebCT Administrator can easily activate external notification of email for both instructors and students.

Instructors can also post announcements regarding grade-posting availability to all students; these announcements would be seen by students when first entering the WebCT environment at the myWebCT interface. MyWebCT is a central location where students and instructors view and access the courses in which they are registered, and from which they also receive announcements that link directly to new course quizzes, discussions, email messages, assignments, and institutional happenings. The system administrator can add announcements globally to all myWebCT login pages. Instructors can add announcements to individual course login pages.

2.12. Does your product allow the designer individuality in course design (customizing icons, labels, banners)?

Response: *Please refer to question 2.3*

2.13. Does your product allow for internal linking (tool to tool)?

Response: *In WebCT, when you add content as a module you can also incorporate a variety of interactive tools to supplement the material. Internal links are built by simply organizing content pages into content modules, or by selecting a tool that is associated with a certain page, or by simply associating content page or graphic with certain elements in the course. These actions take place by using specific tools within the course site, and are automatically updated when content or sequencing of content is changed or modified.*

2.14. When uploading zip files to a course, does your product allow for all files to be viewed, or just the index.html?

Response: *A WebCT course consists of files (including HTML, text, and graphic files) that are used by the various tools within WebCT. Typically files for a course are prepared on a personal computer by the instructor. These files are easily uploaded from the computer to the File Manager, which resides on the WebCT remote server. Once the files are moved to the File Manager, they can be hyper-linked to various areas in the course.*

Files in a WebCT course are organized and stored in folders, and can be viewed by clicking on the file's title. The File Manager is particular to each course site.

WebCT allows for the uploading and downloading of zipped files. If files are zipped in a particular sequence or in files folders, uploaded and then unzipped, they will retain their sequence or structure from which all files can be viewed.

2.15. Does your product allow for one initial course material upload, and then allow the designer to move material to various tools?

Response: *The Designer Map is part of the Designer's Control Panel in a WebCT course. From this one screen a designer can view all the possible tools, links and pages that can be added to the course, manage and modify all course functions, as well as view the items that have already been added to the course.*

2.16. Does your product have WebDAV features (drag-and-drop)?

Response: *In Campus Edition v3.8, content is uploaded with either WebDAV drag-and-drop or via the browser. To enable WebDAV, WebCT has implemented mod-dav, which is an Apache module that enables WebDAV functionality for the Apache Web Server. WebDAV can also be used for the drag-and-drop Import or Export of courses. WebDAV technology allows users to create web folders for uploading and downloading content as if they were simply managing a folder on a computer desktop. Any content developed in applications that use WebDAV technology can be published directly into Campus Edition's File Manager. This drag-and-drop functionality allows for file management with all the speed, control and functionality of working on a home system. With Campus Edition, users can set up any folder they have permission to use as a web folder, and fully navigate through the hierarchy of that folder (again, as long as they have permission to enter it), to place files as determined.*

2.17. Does your product provide online assessment safety features (ability to save)?

Response: *In a WebCT Quiz, students save their answers by clicking on a Save Answer button. When a student has completed answering each of the quiz questions to their satisfaction they can click on a Finish button to submit the completed quiz to the Gradebook. If a student leaves the quiz page before clicking Finish but has been clicking on Save Answer, WebCT automatically saves the assessment. In the Instructor Gradebook the assessment is tagged as In Progress. When the student resumes the same assessment, they will be within the same attempt number, and they will be able to view the answers entered previously and alter those answers if they choose.*

2.18. What security features does your product offer?

Response: *WebCT Campus Edition runs with mod-SSL Apache encryption for full-strength encryption of all data transfer between server and client. WebCT's Campus Edition uses standard Apache authentication and has the additional option for cookie-based authentication. With cookie-based authentication an inactivity timeout value can be set on the server for the cookie, in the event students/instructors leave their browsers unattended. WebCT's Campus Edition also has a logout button within the courses, which increases the security for students/instructors accessing WebCT in public labs. WebCT can also support SSL. If the institution chooses not to encrypt all data between client and server, but only the passwords, users can be authenticated externally on an encrypted server, and that authentication information can then be forwarded into WebCT using the auto sign-on code. WebCT will integrate with external security systems such as LDAP, Windows Domain Controller or Kerberos. We will provide detailed instructions in our systems administrator guide and provide technical consulting to assist you with this if needed.*

There are five levels of access security (or permissions) within the WebCT platform. All access levels are controlled by passwords. Administrators control the server management, designers and co-designers author and deliver the course content and grade assignments, teaching assistants may be granted a variety of access options by the instructor/designer, and students may access the course and certain materials at the instructor's discretion (according to settings established by the server administrator).

Additionally, WebCT includes a WebCT-timed logout facility, accessible from any page in WebCT. Organizations can also customize the setting for automatic timeout/logout from WebCT, providing improved security and session management capabilities.

2.19. IP restricted exams?

Response: *An instructor may assign an IP mask allowing the exam to be released on a specific date, for a specific time, to specific students, in a specific lab.*

2.20. IP restrict administrator interface?

Response: *This capability is not currently supported in WebCT Campus Edition. However, we are currently considering it for future release.*

2.21. Students permitted to change password?

Response: *Students are permitted to change their password once they have logged into their myWebCT homepage. You can require users to change their password in the following situations:*

- *After they log on for the first time*
- *After a certain number of days*

Additionally, users can specify the minimum and maximum length of passwords.

2.22. Passwords are stored in plain text anywhere on server?

Response: *All passwords within WebCT are stored in encrypted format using the standard UNIX DES encryption method.*

2.23. Does your product run over SSL?

Response: *WebCT will run with mod-SSL Apache encryption for full-strength encryption of all data transfer between server and client. If the institution chooses not to encrypt all data between client and server, but only the passwords, users can be authenticated externally on an encrypted server, and that authentication information can then be forwarded into WebCT using the auto sign-on code.*

2.24. How are courses initially created?

Response: *The WebCT Administrator is responsible for initializing the shell for each course and assigning the Designers for the course. At that time the Administrator can also choose to populate the course by assigning a pre-built template.*

Template courses can be used to create several courses with the same basic content, organization or a standard look and feel. This template course may contain common information, an organization scheme and basic navigational components.

WebCT's course templating feature allows any course site to be used as the basis of other courses. This means that a program, a department, or an institution may develop a template that is then used as the starting point for every course site offered through that institution. Customized templates carry the institution's preferred look and feel as determined by key decision makers. Many features of the course template may be locked in place at the administrative level, so that faculty are encouraged to focus on content and on engagement with students, rather than on design issues.

WebCT's templating feature can be incorporated within the WebCT Course Builder Tool. This tool is a forms-based tool that allows an instructor/designer to simply fill in fields and create an entry level course complete with syllabus, basic content and information, in less than an hour – using the institutional template, if desired.

The Designer Map is part of the Designer's Control Panel in a WebCT course. From this one screen a designer can view all the possible tools, links and pages that can be added to the course, manage and modify all course functions, as well as view the items that have already been added to the course.

The Course Map allows a user to view and navigate through an entire course on one page. The Course Map automatically updates whenever a change is made to the course. This feature helps give a visual overview of the course as it is being developed as well as once it has been completed.

Instructors/designers may edit and revise the course at very granular and specific levels, such as correcting a spelling or grammatical error, or at a broader level, such as changing the content organization. Changes are accomplished within minutes, and presented to the students when the instructor actually authorizes that change to be viewable.

2.25. How is course material archived, retrieved, and modified from semester to semester (course backups by instructor and/or administrator)?

Response: *WebCT features a Course Backup Tool, **which** creates an archive of the entire contents of the course, including student information, assignments, quizzes, etc. Essentially, this is a compressed “snap shot” of the course that can then be restored on any WebCT server running the same or higher version of the software. Course backups are convenient ways to move and archive courses and they can be created by instructors or administrators. The WebCT course backup is a proprietary format that retains the original format of all content within the course. It can only be restored on WebCT systems.*

The WebCT Course Backup tool is an important feature of the course. With the backup utility an instructor can:

- *Create snapshots of the course at various stages of development.*
- *Download a backup of the course for safekeeping (particularly useful if the instructor wishes to start with the same course the following semester).*
- *Restore a previously made backup of the course if unwanted changes have been made or if the course has become corrupted.*
- *Move a course to a different WebCT server by making a backup on the current server and uploading the backup to the new server.*

2.26. What happens to a student's record when they are dropped from a course and then re-added?

Response: *Dropping students is as straightforward as eliminating their name from the course Gradebook at the instructor level or deleted from the global database at the WebCT Administrator level. Instructors may also simply “deny access” to students who have dropped the course, in order to retain some records of their presence in the course, if so desired. If WebCT is integrated with an SIS, Add / Drop information is shared automatically between the two systems.*

2.27. Does your product support load balancing for its servers?

Response: *To ensure that WebCT Campus Edition fully meets the performance needs of institutions that have broad scaling requirements, WebCT has done significant tuning to enhance vertical performance on a single server. WebCT has thoroughly tested vertical performance under a number of scenarios and has found that WebCT Campus Edition running on a single server consistently outperforms the performance*

of horizontally scaled (load balanced) configurations and in addition provides a more robust and reliable solution.

2.28. Does your product support fail-over for its servers?

Response: *As of WebCT 3.8, WebCT has a failover solution for Windows, Linux and Solaris. WebCT makes use of best-in-class software from 3rd party providers to create a failover environment. We use Sun's Sun Cluster software on Solaris, and Steeleye's Lifekeeper on Windows and Linux to accomplish failover. WebCT has worked closely with its partners to make sure their integration with WebCT can be carried out in a supported configuration to ensure failover.*

2.29. Does your product have helpdesk (limited administrator) features (how many levels of control)?

Response: *To assist in managing WebCT users, WebCT provides a unique Helpdesk user role. The WebCT System Administrator can assign different levels of access to each helpdesk user. The users authorized for this role can assist with the following tasks:*

- *add users to courses*
- *remove users from courses*
- *change user type*
- *add global database records*
- *remove global database records*
- *query the global database*
- *modify password and user information*

2.30. How long will your company support the current version of your current product?

Response: *WebCT will support each version for at least two years after release.*

2.31. How much notice would you provide once you decide to no longer support a particular version?

Response: Please see above.

2.32. What kinds of support are provided for faculty members while they are developing courses that will use your course management system?

Response: *WebCT offers three levels of Technical Support: Basic, Premium and Premium 24/7. Specific offerings and guaranteed response times vary; please consult our standard Support Services descriptions at: <http://www.webct.com/options>. Institutions that purchase WebCT Campus Edition receive support for two named administrators. Faculty Support (for named faculty members) is priced by the individual and bought separately. Faculty members can, however, take advantage of all of the free WebCT Support resources on our Support website at <http://www.webct.com/support>. These include a free Support KnowledgeBase and our "Ask Dr. C" question and answer service.*

*WebCT recognizes the importance of post-sales support and has been recognized by our customers for offering **superior customer care**. WebCT...*

- *Achieves consistently high levels of satisfaction with Technical Support (as reported in customer surveys) and consistently achieves over 99% compliance with our Service Level Agreement.*
- *Provides flexible Support levels depending on needs of the institution.*
- *Provides extensive Support infrastructure for faculty and administrator development.*
- *Provides an extensive array of faculty development workshops.*
- *Provides a large network of free Support including local users groups, the "Ask Dr. C" Q&A Service, active users listservs, and online communities.*

Our customers have acknowledged WebCT for providing superior customer care. Please find an extended listing of customer testimonials on our web site at:

http://www.webct.com/support/viewpage?name=support_customer_comments.

2.33. Can a faculty member call/email for help? At what times? What is your response time for faculty asking for assistance/answers?

Response: Information regarding the hours of support and means of contacting support are available on our website at <http://www.webct.com/options>.

2.34. How is your product compatible with PocketPC and other handheld and wireless devices?

Response: WebCT provides the ability to Integrate Palm™ Datebook with the WebCT calendar via the LinkWebCT utility. Every time users run the Palm HotSync operation, LinkWebCT will check to see if the host PC is connected to the Internet. If a connection to the Internet is established, LinkWebCT will retrieve any new Calendar entries from their WebCT account and download them to their datebook.

2.35. Will the software work seamlessly with the MS office products in terms of file export and import sharing?

Response: Any content developed in applications that use WebDAV technology can be published directly into Campus Edition's File Manager. This means that content developed using the MS Office Products can be added to the WebCT Campus Edition file manager using drag-and-drop, and then can be added to any WebCT Course Module in its native format. If a user has the proper authority, MS Office content that has been placed in the WebCT file manager is directly accessible to the user from the desktop by simply clicking on the file as if it were local. Since the native file type is retained, the file will be opened by the MS Office product associated with the file type.

Gradebook and statistical information can be exported from WebCT in comma-delimited format, making it very easy to view and manipulate the data outside of WebCT using the MS Office product suite.

2.36. Compare your chat feature to your competitor's in terms of ease of use?

Response: The Campus Edition **Chat tool** is a java applet that allows students and instructors to communicate using text. The chat tool has a total of six rooms. Four rooms can be customized (given a unique name) by the instructor. These four rooms are also logged so that the instructor can review, edit, and share the communication with others in the class if appropriate. There are also two chat rooms that are not logged. The first room is a course wide chat room that allows students to chat freely. The second chat room is a campus-wide (or server-wide) chat function that allows students to talk to other students in different classes across campus. Chat users can share URLs with each other during chat. Chat users can also select individuals to send 'private' messages to that others in the room cannot see. The chat rooms can be used for many different functions in a teaching environment. Some uses include live group discussion, lab projects, instructor office hours, student information seminars, live lectures and co-operative research.

2.37. What graphic formats does your system support?

Response: WebCT accepts content developed with nearly any tool that can be delivered via standard web browsers.

2.38. What is your company's 3-5 year projection for new features or functionality to be added to the system? Will these new features be made available within the product level currently available through the UNC contract, or will they require purchase of additional or upgraded products?

Response: *The investment in WebCT Campus Edition version 3.8 specifically entitles institutions to WebCT Campus Edition-related product upgrades, patches, and fixes for the initial license agreement and any subsequent renewals according to the terms of the license agreement. Students may be enrolled in more than one course that uses these services, and the number of courses supported is unlimited.*

WebCT Confidential. *Over the next three to five years, WebCT expects to maintain its laser focus on teaching and learning as a core mission of the academic enterprise. We will continue working jointly with our customers to understand their needs and ensure that they are instantiated in our products, services, support and partnerships. WebCT's commitment is to provide customers the most flexible, adaptable product on the market—a product that customers can configure to work the way they need it to—regardless of their size, mission, technological sophistication and level of support, student mix, class size, mode of teaching or pedagogical approach. We are also committed absolutely to delivering a product that is easy to use and we are focused on continuous, customer-validated improvement in this area in every release.*

We believe that with our customers, we are working that the nexus of three worlds—academia, technology and publishing-- undergoing profound externally and internally driven change. While we have a number of initiatives that we are working closely on today, we are also aware that we are in a field that did not exist at all until six years ago and that customer-driven change will be a constant. That is why our most critical focus has been on building an architecture and design will be the right solution for our customers today—and tomorrow.

Some current areas of focus, based on customer feedback, include the following: Increasing and more complex levels of integration across the institution for example with the library, with student services, with content and data repositories, with the enterprise portal. Greater pervasiveness and capabilities in wireless and hand-held technologies, used both for productivity and pedagogically oriented activities. An expected proliferation of open standards-compliant learning objects and the need to share, modify, reuse, re-purpose, protect rights and sometimes engage in commerce around those objects Increasing needs for mining the data in our learning systems for use in continuous improvement and accreditation processes A growing focus, particularly in public institutions, systems, and consortia in our customer base, on K-20 and life long learning initiatives, and, as always central to our mission, Trends in teaching and learning that require support from our own products and/or new kinds of partnerships with institutions/systems and corporations.

2.39. Provide data demonstrating speed of access?

Response: WebCT accepts content developed with nearly any tool that can be delivered via standard web browsers.

2.40. How will your product support team meetings (example: 5 or more people)? What additional software would be required to support this activity?

Response: *WebCT has a very robust suite of communication and collaboration tools that are designed to allow students to participate in discussions, provide thoughts, information and materials in a group environment that allows them enough time to carefully formulate the information they wish to share. It is also an excellent place to engage in specific topics and discussions that correspond to labs and group work.*

The Student Presentations Tool allows instructors to create student groups. These groups then have access to a communal file sharing area and private discussion forums that only group members have access to. This allows the created groups to share files, discuss issues and present projects to their instructors and the class. This tool is useful for group projects. It allows students to work collaboratively and privately to engage in research, communication and information sharing.

The Discussions Tool allows students and instructors to engage in asynchronous or “threaded” discussions on different topics. It allows students and instructors to concentrate on a variety of topics and organize their discussions and threads accordingly. Students and instructors can post comments, attach files and send Web links to the group with access to the discussion. The Discussions area is also archived so that the instructor can search and review the different areas of discussion. As with course-internal email, alerts in the myWebCT homepage area tell instructors and students when any new postings have been made in the Discussions area.

The Chat Tool allows for synchronous sharing through a text-based medium. This allows students to 'talk' with each other regardless of distance. The WebCT server administrator determines the limit for the maximum number of users per simultaneous interaction. The default is 500, but this number can be adjusted up or down depending upon what resources the campus wants to devote to this function. The number of simultaneous participants per interaction is determined by the class size (assuming it does not exceed the limits established by the server administrator).

The Whiteboard Tool allows for synchronous sharing of images and text. Like a chalk/whiteboard in a room, users can share ideas that are best described pictorially rather than with words. Examples would be demonstrating lab concepts or materials, editing equations, group discussion of images, presentations, etc.

2.41. If we adopt your product, how can we communicate with campuses that use other course management systems?

Response: *The WebCT e-learning Hub provides many resources that are collected, moderated, and sorted by experts in various fields – resources are selected for their usefulness to faculty and other users. General public communities focused on specific topics are rich sources of information and resources.*

The e-learning Hub houses a rich library of resources that have been developed or collected to directly support the work of teaching and learning, especially in the online environment. Public forums focus on specific academic communities, or on specific stages of building experience and learning in the online environment. In addition, the e-learning Hub can provide custom community sites that are private, password protected, controlled and moderated by the campus. WebCT provides infrastructure, training, support and site development, including clustering and sorting basic resources for institutions or faculty groups. The community sites are easily linked from within course sites, or from the general WebCT login page, if desired.

2.42. How fully does your product work with the following operating systems: Windows, Mac OSX, and Linux?

Response:

SERVER PLATFORMS	<ul style="list-style-type: none"> - Sun SPARC Solaris 7 & 8 - Red Hat Linux 6.2, 7.2, 7.3 - Microsoft Windows 2000 SP2 - Microsoft Windows 2000 Advanced Server SP2
CLIENT OS	<ul style="list-style-type: none"> - Windows 98/Me/2000/XP - Mac OS 9.x, OS 10.1.x

BROWSERS	<ul style="list-style-type: none"> - Netscape 4.76 and 6.2.1, 6.2.2, 6.2.3 (PC & Mac) - Microsoft IE 5.x & 6.0 (PC) - AOL 5.0 (Mac) - AOL 7.0 (PC) - IE 5.x (Mac OS 9.x) - IE 5.x (Mac OS X 10.1)
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Figure 9: WebCT Operating System Compatibility

2.43. Currently Western Carolina University faculty have developed course materials in both Blackboard and WebCT. Please describe the work required to convert from your competitor’s product to yours. Include description of any tools, resources, or services available to assist in the process and the costs for any not included in the product as purchased.

Response: *WebCT offers services to convert course materials from other WebCT products as well as other CMS tools, such as Blackboard. These services include*

- *Conversion Tools: Recommending third party conversion tools that can be used to perform migration with your own in-house manpower. WebCT’s commitment to open standards has made it very easy for other companies to create complementary conversion tools. There are currently a number of organizations, including Giunti Interactive Labs (<http://www.giuntilabs.com>), Italy’s leading educational publisher, who have developed user-friendly utilities that are acknowledged to convert large numbers of courses from legacy systems to WebCT. If Western Carolina University chooses to handle conversion of legacy resources using in-house staff, WebCT will work with WCU to select the most appropriate conversion tool. WebCT also provides documentation and training on the WebCT Content Migration Utility, which migrates WebCT course materials from other WebCT products into newer versions.*
- *WebCT Conversion Services: Delivering WebCT conversion services, where WebCT moves all necessary content from other products into WebCT. This solution is for institutions that do not have adequate in-house manpower and find a completely outsourced solution most convenient. WebCT’s Conversion Services program leverages experienced consultants who work closely with the institution to ensure that courses are accurately transferred into the desired version of WebCT. In this model, WebCT will convert all legacy content to WebCT, based on course design standards agreed to by WCU and WebCT at the beginning of the service.*
- *Learning Transformation Services: For either of the above solutions, WebCT recommends that university systems take advantage of a conversion period to perform a more structured analysis of courses rather than simply performing a flat conversion of all legacy materials. WebCT provides an unprecedented opportunity to maximize the value of existing course assets. Transforming, rather than converting this content can significantly reduce conversion time and costs, and lead to more effective use of materials across the system. WebCT offers a Content Transformation Service that will assist WCU in thoughtfully triaging and planning conversion, which can then be carried out using either third party tools or WebCT’s Conversion Services.*

2.44. How quickly can someone learn to use your product?

Response: *WebCT designs its software with the experience of the end user in mind; we implement new enhancements to ease-of-use with each release, based upon input from our broad-based user community, which includes our Product Advisory Board which meets several times a year with the WebCT Development Team and Executives. With our Professional Services Organization’s “Introduction to WebCT” course, learners are able to learn to use WebCT’s most common course tools within an*

afternoon. Other workshops, in addition, will help users refine these basic skills toward the development of best practices in online teaching with WebCT.

2.45. Assume we were to adopt your system effective July 1, 2003. Please provide a 3-year projection of costs. Be specific about any projected charges and/or increases for services/maintenance.

Response: *WebCT license fees vary according to the particular software, which the institution chooses to use. Currently, WCU pays \$22,000 for an annual license for Campus Edition. License fees are not established until late in the year, so accurate fees for the future are not available. An estimate of a 10% increase per year is acceptable.*

2.46. Please provide at least three university references we can contact regarding the effectiveness of your product's features and functionality. These may be the same as or different than the references regarding system integration.

Response:

The University System of Georgia.

Dr. Brian Finnegan

Associate Director: Emerging Instructional Technology

(706) 227-5403

brian.finnegan@usg.edu

This year, the University System of Georgia signed a multi-year system-wide agreement to license WebCT Vista across the entire system, as the enterprise-wide e-learning environment for its 34 member institutions. A press release describing the adoption of this centralized e-learning solution can be found on our website at

<http://www.webct.com/service/ViewContent?contentID=10219049>.

For more information about WebCT's history within the Georgia Board of Regents, please also consult an Eduventures case study from November 2001, which is available on our website at

<http://www.webct.com/service/ViewContent?contentID=9571967>

The University of Alberta

Susan Stein, Project Lead, Distributed Learning and WebCT Administrator

(780) 492-9353

susan.stein@ualberta.ca

A member of the WebCT Institute Program, the University of Alberta is WebCT's largest customer to date with over 100,000 student accounts. The University is looking to WebCT Vista to attain some of its core institutional objectives: to find new ways to effectively attract and retain students and faculty; improve course quality and flexibility; increase efficiency; and increase student success. A Sun Microsystems' Center of Excellence for E-Learning, the University of Alberta is also a WebCT Institute. An Eduventures case study on the Alberta implementation is and available at <http://www.webct.com/service/ViewContent?contentID=7183614>.

The University of Ulster

Dr. Alan Masson, Assistant Director of the Institute for Lifelong Learning

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aj.masson@ulst.ac.uk

The University of Ulster currently uses WebCT across its entire system to serve 1,500 faculty members and a total enrollment of 21,000 students. Ulster looks to WebCT Vista to be the

cornerstone of its e-learning infrastructure as it continues to establish its national and international presence. An Eduventures case study on the Ulster implementation is available at <http://www.webct.com/service/ViewContent?contentID=7183586>.

Appendix C: Questions for WebCT and Blackboard – Answered by Blackboard

Please answer the following questions based on the product version that is available through the University of North Carolina system contract. If another version of your product offers relevant features, be sure it is clearly indicated that the functionality is available only through purchase of the alternative product or version.

These Questions reflect information desired by the review team. They are not the sole basis for evaluation of the systems.

1. **Integration with other university systems:** Western Carolina University has made a commitment to using SCT business systems (currently SCT Plus, with plans to move to SCT Banner) and to using Campus Pipeline. We also use Innovative Interfaces library software. We need to understand how your product will integrate with these other products to produce a unified environment.
 - 1.1. How do you support integration with these systems, in terms of timeliness, off-the-shelf solutions, or response to upgrades by any of the products? Please be specific about interfaces, additional products, or other customization required and whether they are available through your company or must be developed by our staff. Also, be specific about any costs for integration that would not be included in the price in your basic license agreement with the UNC system.

Response. *We have several integrations to date with the SCT suite of products. There are three options for integration with any SIS.*

1. *Snapshot based integration where we run reports at specific times against your SCT system and extract all user, course, enrollment, and faculty assignment information. This process can run as often as you would like and places limited overhead on your SCT system. The only custom portion of this process is the reporting tool that extracts the data.*
2. *Event-driven integration where we utilize java based API's and trigger off of events as they occur in your SCT system. The only custom work required is the identification of the triggers to initiate the transaction.*
3. *A SOAP based interface to receive XML data and produce real-time transactions for student, course, enrollment, and faculty assignment data. There would be custom work to identify and transport the XML streams of data.*

We have over 40 SCT/Blackboard integrated clients live. One time cost associated with the projects varies on the client's needs, timelines and resources. The average one time is based on time and materials and ranges between \$20,000-\$40,000.

Because Blackboard supports the IMS Enterprise specification we can support the IMS based Mercury Messaging tool for integration as well. When we are integrating with both Campus Pipeline and SCT, we can use the same messaging information that is required for Campus Pipeline to populate Blackboard.

Is there an alternate path to log-on to your product in an integrated solution other than Campus Pipeline? The motive here it to prevent a single point of failure in CP.

Response. *Yes, we can configure our authentication process to fail back on the Blackboard internal authentication methods.*

Will your product integrate with Campus Pipeline for secure log-on?

Response. *Yes. We can support both single sign-on and secure log-on with Campus Pipeline.*

Does your product have partnerships with SCT and CP for *continued compatibility* between your respective systems?

Response. *Campus Pipeline is a member of the Blackboard Building Blocks program. Through this partnership, Campus Pipeline offers integration agents for the Blackboard Learning System. These agents provide for data integration and single sign-on between the systems. The Building Blocks framework provides standard APIs that support continued compatibility with Campus Pipeline as either company updates its core technology.*

SCT has developed integration technology that supports event-driven (real-time) transfer of data related to users, courses and enrollments from SCT Banner and Plus to the Blackboard Learning System. This technology leverages the standard Blackboard data integration APIs to transfer the data, to support continued compatibility between the systems. Since an SCT contractual restriction currently prohibits SCT from developing a formal partnership with Blackboard, the client should contact SCT to request complete details and a joint scope meeting that includes SCT and Blackboard.

Does your product allow grades to be published from the course management software to SCT by the instructor?

Response. *Yes, we have a grade reporter API to pass interim and final grades back to the SIS, this process can be automated or with a simple custom portal module, be manually triggered by the faculty member.*

Does your product allow grades to be published from the course management software to SCT by the instructor?

Response. *See above.*

What tool/method is used for importing/exporting data for registrations, drop/adds, student ID changes, grading, etc.?

Response. See answer to question 1.1

How does your product interface with the Innovative Interfaces library software, especially a link to course reserves?

Response. *At this point, there is no formal interface with the above product. We have several options here though:*

- *Create a single sign-on environment with this application*
- *Utilizing our BuildingBlock API's, we could develop a formal and granular integration where several access points could be exposed from the portal, to the course environment for students, to the control panel where faculty can chose which components to expose to the course environment.*

Please list at least three universities that have successfully integrated these products that can serve as contacts for us to explore these issues further.

Response:

University of South Florida:

Alicia Balsera, Associate Director of Academic Computing; alicia@usf.edu; 813/974-1782

East Carolina University:

Dr. Darryl Davis, Associate Vice Chancellor for Distance Education; davisa@mail.ecu.edu; 252-328-2710

Matt Long, Instructional Technical Consultant; longm@mail.ecu.edu; 252-328-0152
North Carolina A&T:

Richard Hayman, Director of Teaching Learning Systems; hayman@ncat.edu; 336-256-0211

Product Features

Will any advertising content be on your system?

Response. No, Blackboard does not have advertising.

Describe how your product aids in creating a pedagogically sound course.

Response. Blackboard provides the flexibility to organize a course so that it follows the chosen pedagogy. The organizational structure of one's course can be replicated in Blackboard. By easily customizing the navigational areas, structuring the content areas into folders and sub-folders, creating a hierarchy of content items, an instructor can model the structure online that they use for an effective class session. Blackboard has learning units that guide users sequentially through the course. As well, one can easily maneuver from content to discussions, activities and assignments.

Does your product allow the designer to edit HTML documents from within their online course, including linked documents?

Response. We do have a BuildingBlock enabled WYSIWYG editor that allows faculty to edit HTML content that resides inside the Bb environment, to date it does not support the editing of external content.

Does each of your course management tools have a distinct function?

Response. The most common comment from our clients is "ease of use"

Does your product allow for a place to store the designer's entire course content online?

Response. Yes, they can store content inside folders of a course.

How extensive is your student release functioning (what types of criteria are allowed)?

Response. We support the manual release of content when faculty chose, or time based delivery of content.

How extensive is your student tracking functioning?

Response. With Blackboard, an instructor is able to filter statistics by user, by date, by week, and gauge student activity through a number of items. One can observe the frequency of student hits, and track user access to content items.

How can I drill down and determine individual student to page review tracking within the course web site?

Response. Each course has a course statistics section; as well the Learning System provides a separate table in the database dedicated to extracting custom reporting information.

Describe the robustness of the test tool functions. Be sure to address the on-line test taking development, scoring and reporting features.

Response. Built in assessment manager has the following core functionality: develop assessments through intuitive, step by step workflow, administer multiple question formats, including multiple choice, multiple

answer, true/false, matching, ordering, fill in the blank, and short answer/essay, create question pools to store questions, import and export banks of questions and randomize question delivery in assessments, build password protected quizzes, timed assessments, and customize feedback for correct answers and each incorrect answer, make assessments available to students within specified date and time ranges, generate statistics and item analysis reports for student answers to objective questions, include images, attach files/documents, and URL's into assessment questions and answer options, question upload from flat file, modify tests after they have been deployed, allow for make up tests for select students, create scientific notation and mathematic equations for question text and answer items, deploy assessment within all content areas with increased flexibility.

Describe the robustness of the student grade book functions (formulas, weighing of grades, selective release). (Does it download to Excel?)

Response. *Our built in grade book provides a framework to manage total point values as well as grades earned on individual assignments and assessments, enables visibility into individual student responses on assessments and aggregate statistics of student responses to assessment question items, allows sorting by various criteria, including: default order, date added, name, or grade book item category, calculates weighted percentages by instructor defined weighting of value of gradebook items, utilizes symbols to quickly and easily represent status of assessment or final grade, supports custom definition of the value of letter grades and custom symbol sets (per test) within gradebook (e.g. 95-100 = A+), grade upload, calculates weighted percentages by individual gradebook items or by category, calculates and displays letter grades percentages and raw scores all at the same time, add and define custom categories.*

Does your student grade book allow for the automatic sending of email?

Response. No, but the gradebook API exposes the opportunity to develop this functionality.

Does your product allow the designer individuality in course design (customizing icons, labels, banners)?

Response. *Yes, we will demonstrate during the hands on workshop.*

Does your product allow for internal linking (tool to tool)?

Response. *Yes, we will demonstrate during the hands on workshop.*

When uploading zip files to a course, does your product allow for all files to be viewed, or just the index.html?

Response. *You can view any of the files in the .zip file.*

Does your product allow for one initial course material upload, and then allow the designer to move material to various tools?

Response. *Yes, we will demonstrate during the hands on workshop.*

Does your product have WebDAV features (drag and drop)?

Response. *We do offer a complete WebDAV solution as an add-on third party product. This is available today through Building Blocks.*

Does your product provide online assessment safety features (ability to save)?

Response. *Yes, we will demonstrate during the hands on workshop*

What security features does your product offer?

Response. *Blackboard supports several layers of security from MD5 encoding and storing of passwords to a modifiable User Privilege Model.*

IP restricted exams?

Response. *Not by default, but can be supported via customization, we do support a separate proctor password model for assessments.*

Response. *IP restrict administrator interface?
Not by default, but can be supported via customization*

Response. *Students permitted to change password?
Yes, if your system administrator allows the function.*

Response. *Passwords are stored in plain text anywhere on server?
No, all passwords are stored in an MD5 encoding schema.*

Does your product run over SSL?

Response. *Yes, in fact we offer SSL choice, where you can chose which components of the platform run via SSL.*

How are courses initially created?

Response. *Courses can be created manually via web-based interfaces, automatically created based on course templates, or copied from existing courses.*

How is course material archived, retrieved, and modified from semester to semester (course backups by instructor and/or administrator)?

Response. *We support course import, export, archive and restore manually or automated. All import/export functions are open based IMS format.*

What happens to a student's record when they are dropped from a course and then re-added?

Response. *If they are simply disabled, their data is still in the system but hidden from view except by the instructor. If the course is archived, all data for that student in that course is archived, if they are removed, their data is removed.*

Does your product support load balancing for its servers?

Response. *Yes, we support load balancing on the application server side, and DB clustering on the database server side.*

Does your product support fail-over for its servers?

Response. *Yes. We have a multi-tiered architecture. We can support fail over at the application server level via L4 switching, NWLB, or Veritas clustering. We can support DB clustering as well.*

Does your product have helpdesk (limited administrator) features (how many levels of control)?

Response. *Our product offers the following roles and permissions for accounts:
For the Community Portal System.
Course Administrator*

Guest

- *None*
- *Observer*
- *Portal Administrator*
- *Support*
- *System Admin*
- *System Support*
- *User Administrator*

For the Learning System

- *Course Builder*
- *Grader*
- *Guest*
- *Instructor*
- *Student*
- *Teaching Assistant.*

All of these are modifiable.

How long will your company support the current version of your current product?

Response. *Blackboard's company policy is to support two releases back.*

How much notice would you provide once you decide to no longer support a particular version?

Response. *Prior to Blackboard's latest release 6.0, we notified customers about 10 months in advance that our earliest product, CourseInfo would no longer be supported. That was about 10% of our client base. We communicated throughout that 10-month period through product bulletins, emails, direct phone calls to the client and messages on our support site.*

What kinds of support are provided for faculty members while they are developing courses that will use your course management system?

Response. *Blackboard provides support to 2 system administrators who can filter faculty questions to Product Support or to their Blackboard account manager.*

Can a faculty member call/email for help? At what times? What is your response time for faculty asking for assistance/answers?

Response. *Currently we do not provide faculty support except as mentioned in the answer for 2.32.*

How is your product compatible with PocketPC and other handheld and wireless devices?

Response. *Yes, via our Building Blocks program, users can log in real-time via wireless connected devices, or synchronize content off to offline devices, we have created an extension to the standard Blackboard interface that is optimized for the smaller mobile devices.*

Will the software work seamlessly with the MS office products in terms of file export and import sharing?

Response. *Yes.*

Compare your chat feature to your competitor's in terms of ease of use?

Response. *Our virtual classroom which is "section 508 compliant" offers one seamless interface for group browsing, multi-user whiteboarding, real time presentations and web based content sharing, breakout sessions, and full integration of the course map features. You can schedule as many resource based virtual classroom sessions as you like, and all are automatically archived sessions.*

What graphic formats does your system support?

Response. *Blackboard supports any graphic format that your client browser supports.*

What is your company's 3-5 year projection for new features or functionality to be added to the system? Will these new features be made available within the product level currently available through the UNC contract, or will they require purchase of additional or upgraded products?

Response. *Blackboard plans to continue its history of innovation in e-Education by extending and expanding its historical practice of dedicating significant resources toward product development. We believe that the rapidly evolving needs of the e-Education market can only be met through consistent, focused, and client-driven R&D efforts.*

Blackboard's long-term vision for product development centers on supporting four fundamental tenets that drive client success in e-Education endeavors, including:

- *Dedication to ease and simplicity – Including ease of use, integration, customization, administration, etc.*
- *Commitment to openness and flexibility – Through open, standardized API's that facilitate customization and integration with external systems. This also influences Blackboard's partner strategy, which is defined largely by the company's Building Blocks (B2) program. Through the open-architecture B2 program, hundreds of partners and clients are augmenting Blackboard's products by integrating their content and applications with the Blackboard platform.*
- *Development of enterprise-grade technology – Because e-Education is a mission critical endeavor that requires 24/7 availability, scalability, security, robust administrative features, and enterprise-wide integration.*
- *Empowering clients to maximize economic and educational returns – By offering affordable enterprise software that simultaneously provides powerful strategic, pedagogical, and administrative value to client institutions*

Myriad planned features-sets support these core principles (including adaptive learning, cross-site correlation of student performance, fully customizable rights and roles, offline creation and management of courses, and many others). That said, as a general policy, Blackboard does not commit to specific functionality on specific dates. Most importantly, however, Blackboard's product development vision is rooted in a commitment to addressing the principal concerns that largely determine clients' e-Education success.

Provide data demonstrating speed of access?

Response. *Requesting more information to completely answer the question*

How will your product support team meetings (example: 5 or more people)? What additional software would be required to support this activity?

Response. *Collaboration tools that are built into Blackboard have the following capabilities: Monitor and lead chats and actively participate in discussions, archive discussion board threads for easy retrieval, sort archived discussions based on relevant criteria such as topic or date.*

You can also: host multiple, simultaneous and concurrent synchronous sessions, facilitate small break out discussions with either assigned or self-selected groups, view and edit documents on-line and review content, public and private messaging.

If we adopt your product, how can we communicate with campuses that use other course management systems?

Response. *Standards, we currently support the IMS standards for both content exchange and enterprise integrations. All of our BuildingBlock API's are J2EE compliant.*

How fully does your product work with the following operating systems: Windows, Mac OSX, and Linux?

Response. *We fully test and Quality Assure our product on both Windows and MAC OS platforms. We do not currently support Linux as a client, but have several clients running without any issues that we are aware of.*

Currently Western Carolina University faculty have developed course materials in both Blackboard and WebCT. Please describe the work required to convert from your competitor's product to yours. Include description of any tools, resources, or services available to assist in the process and the costs for any not included in the product as purchased.

Response. *We have several options. Any pure web-based content can be directly ported over from WebCT to Blackboard. We offer free tools to manage content conversion, and we offer a full consulting arrangement to convert your entire course offerings.*

How quickly can someone learn to use your product?

Response. *Ease of Use has led to Blackboard's success. Institutions all over the world have statistics showing high adoption within a short period of time. If the end user is comfortable with navigating through the internet with a browser, within 3hrs of training will be comfortable using Blackboard's solutions.*

Assume we were to adopt your system effective July 1, 2003. Please provide a 3-year projection of costs. Be specific about any projected charges and/or increases for services/maintenance.

Response. *Blackboard's pricing model is based on FTE bands which will enable institution license our solutions on an annually basis and grow and their needs grow. After we conduct a needs analysis with WCU, we will be able to provide a long term all encompassing cost projection. Attached please find the current pricing structure that is in place for the UNC System institutions.*

Please provide at least three university references we can contact regarding the effectiveness of your product's features and functionality. These may be the same as or different than the references regarding system integration.

Response.

1. Florida State University: Larry Conrad, Assistant VP & CIO, lconrad@admin.fsu.edu
850-644-0066
2. University of South Carolina: Nancy Hart, nancy.hart@sc.edu;

803-777-2897

3. *University of North Carolina-Chapel Hill: Lori Mathis, mathis@email.unc.edu
919-962-8256*

4. *Duke University: Amy Campbell, amy.campbell@duke.edu
919-660-5980*

*Georgia Virtual Technical College: Neil Rigole, nrigole@gvtc.org
770/786-9522 x5309*

Appendix D: Selected Faculty and Staff Responses

Votes For Blackboard

Hal Herzog. I have used both Blackboard and WebCT in my classes. I have found that Blackboard is far superior for use in on-campus courses. (I have not taught a distance learning class.) I am not particularly computer literate, but was to teach myself Blackboard and had a course web page up and running in about 10 minutes. I am presently using WebCT. Despite the best efforts and infinite patience of Linda Ventura, I continue to find the program cumbersome and unfriendly. As a result, I am using web-based resources a lot less in my classes than I did a year ago.

Blackboard is sufficiently simple that a moron like me can use it easily. However, this may come at a cost. I suspect (but don't know) that Blackboard may be less flexible than WebCT, which could give the latter an edge when it comes to distance learning. However, my vote for course management software clearly goes to Blackboard.

By the way, I have a daughter at Chapel Hill. Last year, one or two of her professors used the web in their classes. This semester all of her courses are web-based. And all of her professors use Blackboard.

Mary Jean Herzog. I vote for Blackboard. Please.

Steve Eberly. Having worked happily with Blackboard (using it in both graduate and undergrad courses) and having attempted to use WebCT and quit (mainly due to the cumbersome process of shifting class web pages into WebCT), I heartily plead for Blackboard.

Betsy Reese, Graduate Assistant, First-Year Composition Program. I have used both programs in my graduate studies and see considerable differences in their abilities to be user friendly. I am currently enrolled in Special Education 620, which uses WebCT on a daily basis. Last fall I took graduate classes at the University of North Carolina-Chapel Hill and used Blackboard for my American Literature class, as well as a class on Joyce's ULYSSES. In my experiences I find Blackboard to be much more user friendly, less of a hassle, and easier to access.

In our special education class we are often required to download articles from WebCT to read for class. Every week we have problems downloading the articles, and usually only half of the class is able to access them. WebCT is frustrating because it takes multiple steps to get to what you are looking for, and often you get diverted to a location you were not looking for. For students that have never used a service like WebCT it is difficult to get acquainted with the program. In Special Ed. 620 we devoted an entire class period to learning the program, and still people struggled to make the program do what they wanted.

At Chapel Hill I had a very different experience with the Blackboard program. On my first visit to the program (we did not devote any class time to learning the program) I was able to access everything that I was looking for. I found the program easy to navigate, and I never struggled to download information from the service. Though I was only at Chapel Hill for one semester I never experienced problems with the Blackboard service.

Elizabeth Kelly. My initial reaction is that Blackboard is more user friendly for both students and profs.

Black board offers an easy to learn technology. The tools used for course management are clear and very functional. One aspect of Blackboard that does generate problems, however, is the grade book feature. The conversion to excel is not as easy as it appears. Also, emailing students through BB is sometimes difficult. One problem involves how accounts such as Hotmail view BB emails. Hotmail provides a function that blocks junk email. When on, the function reads BB emails as junk; however, the send is under the impression that the mail was received.

Even with these problems, I feel that navigating BB is easier. The support for the systems is better and training is simple. On the contrary, WebCT gives me fits. I am not sure what to do or how. I cannot upload documents for students easily and as a student, I was unable to read many posted items. WebCT just frustrates me. Perhaps with better training, I could use it more effectively.

Ultimately, I believe that training is important no matter what system we use. Students and professors need hands on tutorials not quick reference material.

Scott Philyaw. In conversations with colleagues at other institutions I have found that Blackboard is the overwhelming favorite. I have only used Blackboard, but found it easy to learn and use (an important point considering how little time we have to attend training workshops).

I encourage the committee to make their recommendation based on how the majority of faculty will use the adopted system. In that case, I believe that ease of use should outweigh specialized "bells and whistles" that will only be used by a small number of our faculty.

Votes For WebCT

Robert Gabrielsen. Bob Orr and I were discussing our web page & pipeline the yesterday when he mentioned how WebCT / Blackboard would interface with pipeline. WebCT in 'real time' and Blackboard in 'batch', also, he indicated that SCT had purchased WebCT. If this is correct I would recommend that we implement the WebCT product versus Blackboard.

I've not worked with either product but a concern might be how either product would handle upgrades to the SCT product. It makes sense that WebCT would have the inside track. Working in 'real time' would require the 'triggers' to work properly, so that information would flow without error – SCT would assure that. Also, when upgrades were implemented to the SCT product, the interfaces to WebCT should also work and this should be tested by SCT. Bob mentioned another reason that is important – we need to remember and that students would have information submitted by faculty once they registered or denied information if the dropped immediately. This is being very responsive to students and faculty.

The Blackboard product is a 'batch' process – I wouldn't think this would be as responsive to the students or faculty. Another reason is their response to upgrades and then their customers might be slower.

Mark Holliday. I do not use either of products being consider. My understanding is that we have been using WebCT for a number of years. I think we should stay with WebCT unless the alternative is clearly superior. This is because of the current investment in expertise that has developed with using WebCT.

Nancy Norris. My schedule does not permit attendance at the Web-CT presentation. I have used Web-CT for an advanced Spanish Independent Study course for Spanish teachers renewing or obtaining their teaching licensure from North Carolina. From my experience, I found Web-CT to be a very useful and efficient system for course management. So, my vote is in favor of adopting Web-CT for a course management system for WCU.

Nancy Mims. I have taught web-based classes, 50-100% using both platforms. Blackboard and WebCT courses. However, for the last 7 years. I am also a certified resource for Distance Learning Certificates. Although I am a new faculty member this year at WCU, I vote for WebCT.

Jim Kirk. This is Jim Kirk in Human Services. I direct and teach in the MS Degree Program in Human Resources. We offer all of our courses on-line via WebCT. I used to use Blackboard (when it was free) and believe it is more user friendly on the faculty member side. However, I vote that we go with WebCT because it continues to get better and better, it already is supported on campus, and it can best be integrated into our general administrative software.

Newton Smith. I have used both. WebCT is more sophisticated and robust. Right now we do not have the support that is needed to implement either. We will need someone who has been trained and can be committed to really do the support that would be required should we adopt WebCT. Blackboard is easier to use and more intuitive, but consequently less robust and more restrictive in its flexibility. Even if it is easier, most faculty will not be users to any great extent because without support they feel they will be subject to trying something that will take time and will not improve what they are doing and that they might embarrass themselves. The real question is can the university support either of these. . . . If we get the support, then I say go with WebCT.

William Hyatt. I am responding to the Task Force's latest email. Currently in the CJ on line program we have three cohorts of about 25 each running and another scheduled to start in January 2003. We are currently using WebCT and the faculty (5 WCU faculty, four practitioners) have all been trained in WebCT and all but the two new WCU faculty have taught a course in the program using WebCT. Additionally all of the students in the first three cohorts have been trained on WebCT and the fourth cohort will be trained in using it in October. To switch to a new platform in the middle of the above project would be extremely difficult, particularly for the off campus faculty that we use, not to mention the retraining of the students, all of whom are obviously off campus, would be a very difficult undertaking, and not one to be considered unless the advantages to Blackboard are truly overwhelming. Having some limited experience with Blackboard I am convinced that, at the minimum, it has no substantive advantages over WebCT, and in my opinion is clearly inferior in that it limits faculty options in a number of areas.

I strongly recommend continuing the use of WebCT.

Jane Hall. I have been successfully using WebCT since my first distance ed course in the fall of 1999. As I've become more proficient with the many advantages of this software in assisting with course organization, I can hardly think about teaching a course without it. I have not used Blackboard but was present when Jeff Church from ASU presented part of his dissertation research at our university. He compared many software elements between WebCT and Blackboard. His results showed the superior aspects of WebCT. It might be helpful if the task force talked with Jeff or read his work. Jeff's information and my positive experience using WebCT convinces me that choosing WebCT for the university community course management software moves our institution forward.

Kyle Huff. Although I haven't had as much experience with WebCT as many others, I feel I do have a say in this issue.

WebCT has proved incredibly helpful to the faculty I represent in the College of Applied Sciences, and they are currently in the process of learning the WebCT software. They have expressed much satisfaction with the program at this point, and I personally think it would be ludicrous to switch to Blackboard at this time or at any time in the future. Faculty have enough of a learning curve as it is, without exacerbating the issue by switching to a different online support application.

Judy Mallory. I definitely want to continue using WebCT. Please let the taskforce know my vote.

Lisen Roberts. Thanks for your participation on this committee. I want to let you know that I have used and plan to continue using (assuming it's available) the WebCT system. As an occasional distance education instructor for the interdisciplinary Birth-Kindergarten undergraduate program, I was trained in and use WebCT. I'm not familiar with BlackBoard so I'm actually not at liberty to say that WebCT is the better of the two; it's simply the one that Western trained me to use and that I have used to supplement ITV distance education BK courses. I appreciate your committee setting up opportunities for faculty to hear about and try out both systems.

Michael Thomas. As a faculty member teaching in the Master of Project Management Degree Program that utilizes WebCT I would be very concerned if a decision to change to Blackboard was made. Concerns would range about:

how do we change over existing students, the capability of blackboard to give us the flexibility we now have with WebCT (my understanding is that blackboard is a two dimensional program compared to WebCT's three dimensional capabilities), how we change over the existing files in this program, Learning curves (I have worked with WebCT for about 18 months now and I am still finding things that I can do with it. I would hate to have to start all over again with another program).

Edna Waldrop. WEBCT has a stronger partnership with SCT/CP and therefore could provide a more streamlined interface between the products when changes occur. The product already exists for providing data to/from SIS/CP/WEBCT. The single sign-on would not require development.

Blackboard's interface would require more support at the local level initially and with each applicable modification to either product. For these reasons, WEBCT would be a better choice for application development and would provide WEBCT users with a true signal sign-on.

Votes For both

Lisa Bloom. I'm certain that both software packages are very costly, however, if at all possible, I think the university should purchase an institutional license for both. I've used both software packages for both online instruction and web-enhanced instruction. I feel that each is better suited for a different purpose.

WebCT tends to be more labor intensive and requires more technical skills. However, for instructional purposes, it has many more features that facilitate instruction via the web.

On the other hand, blackboard is quicker and easier to use. For web-enhanced instruction, I prefer Blackboard for this reason. I can quickly and easily post readings, course schedules and assignments.

Please consider the purchase of both. Having the flexibility to use one or the other may encourage faculty use of the web..

Appendix E: Feedback Form for Blackboard

Please list the 3 most important strengths of Blackboard:

1. Features
2. Ease of use
3. Public preview feature

1. Great interface (design). Much less busy. (Mary A.)
2. like the module idea (Mary A.)

1. Building blocks (John Adams)
2. Chatroom light (John Adams)

1. Ease of use (Robert Orr)
2. Faculty tools are easy to find/use (Robert Orr)
3. Chat/whiteboard (Robert Orr)

1. Chat feature (Mary Ann Nixon)
2. Building Block (Mary Ann Nixon)

1. Interface/ease of use (Gary Jones)
2. "Community" Interface (on & off campus) (Gary Jones)
3. Additional portal options (Gary Jones)

1. "The hook" (Julie Kihneman-Wooten)
2. Appears easy for faculty to manage (Julie Kihneman-Wooten)
3. Portal linked to the Academic section (Julie Kihneman-Wooten)

1. Transaction system for mechanizing
2. Slightly more controls for students in discussions
3. integrated chat and whiteboard

1. Card office
2. Palm pilot incorporation
3. Templates for course design (cost \$690)
4. viewing of course to market

1. Ease of use (very important) (Nick Norgaard)

Please list 3 most important weaknesses of Blackboard:

1. None

1. Blank (Mary A.)

1. Lack of built in email/devoted communications system. (John Adams)
2. Inability to archive email communications (?) since each email account is from different email providers (Yahoo, Earthlink, Outlook) (John Adams)

3. Cost. To get the system we need, we'll have to license not only blackboard, but all the added programs as well. (net meeting, -----) where these capabilities are to be built in to WebCT!!! (John Adams)
 1. Batch processing instead of real-time (Robert Orr)
 2. too much plugging in other modules not enough built in (Robert Orr)
 3. unsure about integration with back office system (Robert Orr)

1. Can't archive and archive portions of chat (Mary Ann Nixon)
 2. batch upload in integration (Mary Ann Nixon)
 3. additional fee for Building Blocks (Mary Ann Nixon)

1. I begin to see that WebCT has some additional power and sophistication. I also continue to believe that Blackboard has a gentler learning curve. Blackboard may lack some "Whiteboard" features and other considerations potentially important to distance learning. Blackboard might enjoy a further adoption rate on campus. I would be comfortable with either for the campus. (Although I am new I would lean toward Blackboard.) (Gary Jones)

1. Netscape version may not be compatible. Hunter must use older version because of vendors (Ebsco, etc.) (Julie Kihneman-Wooten)

1. No release criteria based on achievement or individual (students)
 2. missing functionality is made up for in costly building blocks
 3. Still less functionality than WebCT.
 4. Help function is less user friendly

1. Basic \$'s then you have to pay additional \$ for building blocks or more complex activities
 2. Integration – need more information on Portal System, Banner, Pipeline does seem as clean?
 3. Seems more geared toward campus students/services. What about the adult student services?

1. Blank (Nick Norgaard)

Are there any items you don't understand or questions you would like to have answered?

1. Need example of Excel spreadsheet for test questions

1. Blank (Mary A.)

1. Blank (John Adams)

1. No. (Robert Orr)

1. Blank (Mary Ann Nixon)

1. Blank (Gary Jones)

1. How well does this link w/SIS? (Julie Kihneman-Wooten)

1. Blank

1. I know WebCT has whiteboard functions but how does the Blackboard whiteboard/chat differ?

2. Chat seems more robust than WebCT but in talking to MPM Students, they are utilizing NETPal etc. to meet their needs.
1. How does customizability compare between WebCT and Blackboard?
2. If systems are comparable today, what about 10 years down the road?
3. Will we have to continually retrain ourselves and students to newer versions?
4. Which company appears more viable? Less likely to die in red ink.

Have you used course management software?

Please circle: WebCT Blackboard Other None

1. WebCT Blackboard Other
1. WebCT Other (Mary A)
1. WebCT (John Adams)
1. WebCT Blackboard Other (Robert Orr)
1. WebCT (Mary Ann Nixon)
1. WebCT Blackboard Other (“Web Course in a Box”) (Gary Jones)
1. WebCT (Julie Kihneman-Wooten)
1. WebCT Blackboard (Some)
1. WebCT Blackboard
 Knowledge Knowledge
 Training Training
 Not instructor not instructor

I thought Blackboard presenters with their education background and styles were better than WebCT presenters.

WebCT product with better integration etc seems stronger.

1. None (Nick Norgaard)

Appendix F: Feedback Form for WebCT

Please list the 3 most important strengths of WebCT:

1. Integrates with current system (Debra Randleman)
 2. Love Web DAV feature for uploading files, folders, executables (Debra Randleman)
 3. Pedagogically sound course development (Debra Randleman)
1. Blank (Nick Norgaard)
1. It seems easy to start (Nick Norgaard) second time
1. Focus on functionality/flexibility
 2. Market strength
 3. Strong and quality support
1. Designer tools such as whiteboard
 2. Drag and drop – time saving
 3. Customize tools, banner, etc.
1. Integration of software with campus pipeline, SCT, Banner
 2. International partnerships – relationships
 3. Higher education focus – customizing product, assessment
1. Vista (scalability) (Scott Higgins)
 2. Forward thinking: pedagogy, ease of use, flexibility (Scott Higgins)
 3. Leaning Information Mgmt. feature (Scott Higgins)
1. Interface with CP – SIS using MMB (Edna Waldrop)
 2. Customer service rating 98.9 (Edna Waldrop)
1. We have it now, and it is superior to any others currently available for the integrated delivery of a full degree program. (John Adams)
 2. Integration and growth potential (John Adams)
 3. survivability and international clout (John Adams)
 4. cost (John Adams)
1. Submission feedback from faculty to students (Scott Higgins)
 2. Functionality of features (Scott Higgins)
 3. Announcements, bookmarks (Scott Higgins)
1. Financial stability of company – they will be around for the next 3-5 years (Jeanne Dorle)
 2. Significant experience in handling large # of students and testing peak load performance (Jeanne Dorle)
 3. Robust functionality based on effective teaching and learning (Jeanne Dorle)
1. Integration with back office system (Robert Orr)
 2. Rich teaching tools (Robert Orr)
 3. Industrial strength application (Robert Orr)

Please list 3 most important weaknesses of WebCT:

- 1. Some of usability not available until 4.0 – Wizards, browser check (Debra Randleman)
- 2. No html editing feature in 3.8 (Debra Randleman)
- 1. Blank (Nick Norgaard)
- 1. to rural environment with slow access which frequently goes down. (Nick Norgaard) second time
- 1. Lack of built-in synchronous audio/video communication.
- 1. Learning curve for faculty with limited technical skill or interest.
- 1. Blank
- 1. No synchronous chat (Scott Higgins)
- 1. Only support CE thru 2004 (Edna Waldrop)
- 1. Blank (John Adams)
- 1. Blank (Scott Higgins)
- 1. Up front cost – but that could be true (Jeanne Dorle)
- 1. Ease of use (Robert Orr)

Are there any items you don't understand or questions you would like to have answered?

- 1. Blank (Debra Randleman)
- 1. There is much I don't understand. I have many questions. (Nick Norgaard)
- 1. How do I learn more about WebCT? (Nick Norgaard)
- 1. Where is the UNC system on the purchase of the Vista product and who is involved in that planning process?
- 1. Blank
- 1. There are several technical items I personally do not understand and all the aspects but we employee people with expertise in technical areas for this reason
- 1. Feasibility of Vista system in with the UNC System. (Scott Higgins)
- 1. Blank (Edna Waldrop)
- 1. When will we be able to integrate to Sound/Video into the system? (John Adams)

- 1. Blank (Scott Higgins)
- 1. No – helpful information (Jeanne Dorle)
- 1. Blank (Robert Orr)

Have you used course management software?

Please circle: WebCT Blackboard Other None

- 1. WebCT (Debra Randleman)
- 1. None (other than my own) (Nick Norgaard)
- 1. None (I liked it, thanks) (Nick Norgaard) second time
- 1. WebCT Blackboard (slightly)
- 1. Blank
- 1. WebCT
- 1. WebCT Blackboard (Scott Higgins)
- 1. None (Edna Waldrop)
- 1. WebCT Blackboard (John Adams)
- 1. Blank (Scott Higgins)
- 1. WebCT (Jeanne Dorle)
- 1. WebCT Blackboard Other (Robert Orr)

Appendix G: Notes from UNC 16-Campus Videoconference (compiled by Steve Eberly)

7 November 2000

Of the participating campuses, most are using and are committed to Web CT. Those committed to BlackBoard, however, include a couple of rather significant schools:

East Carolina U.

UNC-Greensboro

UNC-Chapel Hill

Elizabeth City State U.

Chapel Hill: explaining why they shifted from Web CT in 1999--

BB far easier for faculty to get started on.

BB had far better course-involvement ratio:

During same period (about one year)

C. 650 courses went up in Web CT

Over 1000 in BB

Elizabeth City responded:

BB was easier for faculty to use.

BB administrators promised to address the AAD issue.

Greensboro:

BB system required only 3 systems administrators for

800 course

15,000 users

BB integrated easily with *Banner*.

ECU

BB hosts the courses for their faculty

1150 courses currently

increasing

Wilmington

Agreed that BB was faster for faculty to get started in.

Felt, though, that it was not as "rich" as BB.

Decided to go with Web CT

Chapel Hill

Report from professor using both systems

WebCT was "more flexible"

BB "easier to work with."

WCU

Jane Hall and Scott Higgins

WebCT excellent for their work with off-campus groups

Chapel Hill: on the question of how easy switch is from one system to the other

Switch from WebCT to BB

Took over 11/2 years "for only 50 courses"

English, “our heaviest users of the system,” had used WebCT mostly for chats, but still found the shift “a shock.”

Wilmington:

Primary reason for WebCT

BB did not have “on-line release of testing”

I.e., ability to allow student to progress through a series of tests without faculty intervention.

CH:

WebCT might be better for self-paced distance learning.

Due to “selective release” of testing.

However, School of Nursing “hated WebCT” and was “happy with BB for distance learning”

[Unidentified technician]:

BB releases testing items “by date” but not “by event”

Cannot therefore allow student to proceed to next unit upon achieving grade of 70%, for instance.

WebCT allows for such release.

[Unidentified]:

Campus found problems in integrating other systems into WebCT

E.g., Registration, WIN, etc.

Their faculty and administrators want a “more modular system”

Now using WebCT 4.0

Cannot afford to move to the much more expensive “Vista” version

ASU:

No pressure by WebCT to move up from Campus Edition 3.8 or 4.0.

WCU

Using new Campus Edition

No integration of SIS or other systems.

WebCT currently being used for Distance Learning

Fairly wide trials of BB during “free” period.

Now have to choose which system to support campus-wide.

CH: in response to question about growth of tech support needed

No growth of central support needed as course load went from 50 to 1000+

Support staff have been added as needed in individual schools

Greensboro:

Because of ease of starting in BB, support has been

In course design

Not in use of product.

NC State:

C. 3000 courses on line

Faculty Development group

Lots of staff support

Want more faculty help

NC A&T:

Through BB Enterprises

All courses online
Instructional tech. support for
750 instructors
2 ½ million “hits”
Estimated “8 to 10 FTEs” worth of tech support
“If we added it all up.”

NC State:

Systems Administrator’s issue
Interoperability of all campus systems
Especially all distance learning.
BB system administration doesn’t “support individualizing specialized needs”
E.g., If Nursing were allowed to set up for their special needs, that “over-ride” would allow Nursing to “accidentally” affect all other courses in the system.”
N.B.: Bob Orr (WCU) assures me that this is a problem with either course management system: No such “individualizing” can be permitted in the way the on-line courses operate (if I understood him correctly).

ASU: WebCT has provided “highly efficient support of both the system and faculty.”
However, ASU’s technicians have created a uniform template for beginning faculty use of the system—
Because if they hadn’t, the complexity of WebCT would have “driven most of them [faculty] over the edge”

NC A&T:

Set up mini-workshops in applications
Intro to platform
Future workshops based on individual interests.

ASU:

“Quick Start” to get average faculty member running
“Jump Start” for those already fairly familiar with such applications

[Unidentified]

Best results when the technicians went to the depts.
Intro
Intermediate
Advanced
Participants encourage others in their department.
Summer 8-week sessions
Others as requested by depts.

CH:

Uses BB only for courses
Avoids problems of integrating other campus systems such as SIS.

ASU

Has found that SIS “overrides class management access” in WebCT

Appendix H: Technology Will Reshape Research Universities Dramatically, Science Academy Report Predicts

By VINCENT KIERNAN, *Chronicle of Higher Education*, November 8, 2002

Information technology is likely to reshape research universities dramatically -- changing how they are organized, financed, and governed -- and will also prod the institutions to emphasize instruction more heavily, a new report from the National Academy of Sciences predicts.

The report, issued here Thursday, warns academe against "complacency" in the face of fast-paced technological developments and new competition from online universities and for-profit institutions. The report cautions that research universities should respond "with carefully considered strategies backed by prudent developments -- not just to avoid extinction but to actively cultivate opportunity."

The document, titled "Preparing for the Revolution: Information Technology and the Future of the Research University," was written by a committee that included current and former college administrators, leaders of higher education groups, foundation officials, and industry officials -- but no representatives from faculty groups.

The report says the changes will be driven by expanded computer-network bandwidth and dramatic improvements in both hardware and software, such as notebook computers vastly more powerful than today's models and programs called "software agents" that will autonomously collect information requested by a user.

In light of those developments, the report suggests a possible future for higher education that may not sit well with many faculty members: an academe dominated by freelance instructors selling their services to many institutions, which in turn compete for students who buy courses a la carte from many different colleges.

"Although the university has survived earlier periods of technology-driven social change with its basic role and structure more or less intact, the changes being induced by information technology are different because they alter the fundamental relationship between people and knowledge," the report states.

For example, the report predicts that information technology, by allowing students to learn both at a distance and at their own pace, will undercut two commonplace features of undergraduate instruction: lectures and a common reading list. Rather, students will collaborate online with one another and their instructor, the report says.

"The faculty member of the twenty-first century university could thus become more of a consultant or a coach than a teacher, less concerned with transmitting intellectual content directly than with inspiring, motivating, and managing an active learning process," the report states. "That is, faculty may come to interact with undergraduates in ways that resemble how they interact with their doctoral students today."

"Higher education as a cottage industry, in which individual courses are made to order by individual faculty, may not be able to compete much longer in either cost or quality with commodity educational products," says the report.

Mark F. Smith, director of government relations at the American Association of University Professors, said that he has grave concerns about the role of the professor devolving into little more than of an educational consultant. A college education, he said, will continue to rely upon faculty members who are

deeply enmeshed in students' learning, through activities such as guiding discussions and presenting their expertise to students.

"There still is an important role for human interaction in a controlled sense," Mr. Smith said. "Information technology can enhance that experience, but it can't totally substitute." James J. Duderstadt, the president emeritus of the University of Michigan, was chairman of the academy committee that wrote the report. He said that individual universities will have to conduct "grass-roots conversations" with faculty members about the need to respond to technological change.

"Conversation is the key at this point," he said during a seminar at the academy's headquarters, where the report was released.

The report also warns about the potential impact of competition from for-profit institutions, such as the University of Phoenix and Jones International University. The report says that research universities subsidize their research and graduate training with profits made from large lecture courses and from professional training -- areas into which for-profit universities are likely to expand. "Their success in the higher-education marketplace could therefore undermine the current business model of the research university and imperil its core activities."

Meanwhile, educational institutions have not developed instructional technologies that take advantage of recent developments in information technology, the report argues. "One indicator of this gap is the reality that more space on the typical undergraduate's hard drive is likely to be devoted to MP3 music-audio files than to material related to classes."

Among other recommendations, the report says that research universities must go to greater lengths to train faculty members to use technology. "They are unprepared for the new plug-and-play generation of students."

Douglas E. Van Houweling, the president of the University Corporation for Advanced Internet Development, which oversees the Internet2 project, was a member of the academy committee. He said that researchers have already embraced advanced computing.

"What we have not seen yet is a similar impact on the learning environment," he said at the seminar. Students, who generally are more comfortable with information technology than are faculty members, already demand more and more sophisticated use of information technology in instruction, and those demands are likely to increase, he said.

Academe also must adapt its approaches to governance to react more nimbly to technological changes, the report says.

"It must begin to do so by reconsidering the academic culture that sometimes allows the demand for consensus to thwart action and in which consultation is often defined as consent."

Mr. Smith, of the American Association of University Professors, said it would be unwise to short-circuit campus discussions about the impact of information technology. Consultation and consensus-building are important in shared governance, in part to make sure that decisions are made thoughtfully, he said. "It's important that all members of the community are involved."

Most studies by the academy are conducted with financing by the government or other groups. By contrast, the academy itself underwrote the information-technology study, Mr. Duderstadt said.

Appendix I: Open Course Ware: A Case Study in Institutional Decision Making

Academe Online, September - October 2002, Vol. 88, #5
<http://www.aaup.org/publications/Academe/02so/02soler.htm>

By Steven R. Lerman and Shigeru Miyagawa

On April 4, 2001, the Massachusetts Institute of Technology announced a major new initiative called MIT OpenCourseWare. In addition to generating widespread publicity, including a front-page article in the New York Times, the announcement led to MIT's receiving more than a thousand e-mail messages, most of which reflected the enormous excitement engendered by this first-of-a-kind program. The concept behind OpenCourseWare, known as OCW, is deceptively simple: MIT will create Web sites for all of the courses it teaches, which will be open and freely accessible to the world. The university has committed itself to making OCW a permanent element of its activity by providing financial support for the program in its regularly budgeted operations.¹

As with all seemingly simple ideas, the difficult and complex parts lie in the details. OCW is very much a work in progress. The specifics of how we will reach our goals are to some degree unknown, and much remains to be discussed and decided by the faculty and staff who will implement OCW. Nevertheless, MIT's experience in planning and testing OCW has provided insight into how the program is likely to develop.

OpenCourseWare

Individual professors at many universities (including the authors of this article) have publicly accessible Web sites on which they make their teaching materials freely available. The natural question to ask is, "What distinguishes OCW from what is already happening?" The ways in which OCW differs from these scattered initiatives are in (a) the intent of MIT to systematically build Web sites for all of the courses it offers; (b) the plan for a central support organization that will help to produce the Web sites without requiring extraordinary efforts by individual professors; (c) the creation of a single, searchable organizing structure spanning all the courses; (d) MIT's commitment to the OCW Web site as an enduring feature of the university's operations; (e) a plan to provide a consistent, but not overly constraining, "look" for the sites of the courses represented; and (f) the decision to allow free and open reuse of OCW materials for all nonprofit educational and research purposes.

MIT does not envision OCW as a distance education initiative. We do not intend for students to enroll in OCW courses or degree programs, nor will we offer MIT credit through the OCW program. We will not arrange for interactions with the MIT faculty through the OCW Web site, although some professors may voluntarily choose to correspond with users. The OCW site will simply be a collection of our teaching materials. Users themselves will decide how to profit from the electronic materials we post.

OCW is best thought of as a twenty-first century adaptation of a publishing initiative. Faculty members' participation in the program will be much more akin to writing and publishing textbooks than to teaching courses. We certainly hope that the materials we make available through the Web site will influence how others teach and learn, in the same way that many textbooks have influenced pedagogy around the world. We see OCW as a way to express our faculty's views on the structure and organization of teaching.

Discovery Process

The initiative that led to OCW began with MIT's Council on Educational Technology (MITCET). MITCET's Web site <Web.mit.edu/cet> explains that the council "provides strategic guidance and

oversight of MIT efforts to develop an infrastructure and initiatives for the application of technology to education." In spring 2000, MITCET launched a new program for lifelong learning and appointed a core team composed of different members of the MIT community to implement it: faculty, administrators, and graduate students, including Shigeru Miyagawa, one of the authors of this article. The team, led by Dick Yue, associate dean of the School of Engineering, and assisted by a team of consultants from the firm Booz, Allen, and Hamilton, Inc., was "to develop a recommendation to address how MIT can generate and offer [online educational] modules that provide the target market with a working understanding of current hot issues and emerging fields." An earlier MITCET study had identified the "hot issues and emerging fields" and determined that the modules needed to meet three conditions: they had to fulfill the objectives of the program and be financially viable and sustainable.

At that time, "e-learning" was a powerful buzzword among universities and companies worldwide (both well-established and newly minted ones), but especially in the United States. Organizations were launching start-up ventures and competing for market leadership and financing. Befitting the excitement of the times, MIT's core team began with the idea of making its program generate revenue, that is, ensuring that it would be "financially viable and sustainable"--although the question whether it would be a for-profit endeavor was left open.

How did the lifelong learning team start with a revenue-generating strategy but, in the end, recommend OCW? Hindsight makes it easier to see how all the pieces came together, but for the core team members investigating ideas, nothing was certain, even as late as fall 2000. Of all the ideas considered, that of offering content free of charge was never discussed until close to the launch of OCW. Before deciding on OCW, the core team conducted three major studies: team members interviewed organizations, both educational institutions and companies, engaged in e-learning; they pursued market research and created a business model; and they assessed current e-learning projects at MIT.

The external interviews targeted large companies that offered extensive in-house training programs and institutions of higher learning that had e-learning programs. The roughly forty interviews conducted over four months revealed that a great deal of e-learning was already going on in various forms. The team members concluded that MIT should launch an initiative of its own to stake a position in what appeared to be the most dynamic area of higher education.

But what could MIT do? More research made this question more difficult to answer. E-learning companies, many of them recently established, were signing up universities and, in some cases, prominent scholars in order to license content with "brand" value. It would have been inappropriate for MIT to follow a similar path. It could not "sign up" other institutions that were already engaged in e-learning of their own, and it certainly could not make an initial public offering, because it is a nonprofit organization. Briefly, the team considered launching a for-profit arm of MIT, as some other institutions of higher learning had done (for example, Columbia University established Fathom.com), but this strategy was not pursued.

In developing a business model for a lifelong learning initiative, the core team's market research involved collecting data from MIT alumni with assistance from the university's alumni association. The team saw the alumni as representative of the target audience: college graduates, many of whom are professionals. This market research resulted in several surprising findings. For example, some respondents said they would prefer module-based courses of twenty to thirty minutes each, a time span much too brief to treat any subject matter in depth. The team documented that finding and others—such as the desired level of interactivity (younger respondents wanted more) and the maximum cost individuals and sponsoring companies were willing to pay. The team members then studied different combinations for generating the maximum revenue relative to the cost of production and administration.

In one of the most plausible models developed through this research, an online program would become financially independent in five years. That conclusion contrasted sharply with daily news reports about the enormous amounts of money being made from similar initiatives.

The external interviews, market research, and business scenarios cast doubt on the initial idea of a lifelong learning program that would generate net revenue. It was not clear what MIT could do to define a unique strategy. But the third study—the one assessing existing e-learning projects at MIT—ultimately led the core team to consider an alternative to a revenue-generating initiative. The team interviewed about sixty MIT faculty members who responded to an e-mail query asking about e-learning initiatives in which they were already involved. Their projects ranged from text-based Web sites to online videos of lectures with accompanying study questions. All of the projects related to MIT courses the faculty members were teaching.

Two important lessons came out of these interviews. First, the team learned that, without exception, the faculty respondents created online materials to improve the quality of their teaching. Second, with few exceptions, the faculty members received no monetary compensation for their work. These interviews revealed a core commitment among the respondents to continuously improve their teaching as part of their responsibility as faculty members.

Implementation Phase

At a meeting in October 2000, the core team considered all of its findings, focusing especially on what kind of e-learning project would best reflect the faculty's commitment to teaching. It was then that several members came up with the same idea: why not make MIT course materials publicly accessible online at no charge? It seemed plausible—in fact, likely—that faculty members would value the opportunity to make their teaching materials available to learners from around the world. OCW is a surprisingly simple idea, but its significance would not have been apparent without the extensive research carried out to understand the e-learning landscape and its business realities.

Posting course materials online would not, of course, be equivalent to offering the experience of an MIT education; that can be had only by enrolling in MIT, interacting with the professors, and living and studying with fellow students. But making MIT course materials available online would send a strong message about the university's vision: in the era of the Internet economy, MIT values learning, including e-learning, over financial gain.

OCW had the added advantage of circumventing problems identified in the background studies, most notably, generation of sufficient revenue; OCW would not require a money-making scheme. But implementing OCW would not be free. The final task of the core team was to create a business model for the program defining the cost of its production and administration. The team estimated that it would take \$85 million over ten years to produce online materials from all of the courses MIT offered in 2000.

The core team prepared a report recommending OCW to the provost in November, and the idea was accepted enthusiastically. It was then reported to MIT's president, Charles Vest, who embraced it with equal enthusiasm. Members of MITCET gave separate briefings to every academic department and program at MIT, after which OCW was discussed at a university-wide faculty meeting. Faculty asked questions about implementation, cost, and the potential for giving away an MIT education at no cost, all of which MITCET members addressed. The support among faculty was strong, opening the way for the public announcement of OCW on April 4, 2001.

The Faculty

Participation of individual MIT professors in OCW is entirely voluntary. Each professor will choose whether to contribute his or her respective course materials. This approach is entirely consistent with MIT's overall culture, which places high value on the independence of the faculty. As already noted, most faculty members strongly support OCW, although many have made it clear that their involvement will depend on whether the time needed to participate is within reasonable bounds. This requirement means that the OCW

Web site must be produced as efficiently as possible, with the support organization shouldering the bulk of the work.

Faculty expressed several concerns about the intellectual property rules that would govern content published on the Web site. One question focused on who would own the content created by the faculty that will be made available on OCW. MIT, like most universities, cedes the ownership of textbooks written by faculty members to the faculty authors. Most professors have assumed that this same policy applies to their regular lecture notes and similar materials. The MIT administration resolved the question by confirming that the faculty would continue to own the electronic versions of the materials they create for their courses, even when those notes were transformed into Web-compatible formats by the OCW staff.

A second area of faculty concern related to the use on the OCW site of intellectual property owned by third parties. It is permissible under U.S. copyright law to make some types of copyrighted materials available for educational purposes on a Web site that is restricted to students enrolled in a specific course. But no reasonable interpretation of copyright law would allow those same materials to be publicly accessible. MIT will therefore have to omit such materials from the OCW site (replacing them with references to the materials, including information about where they might be legally obtained), or secure permission for public distribution from the copyright owners.

Faculty members also asked about how OCW would provide services to them. Like almost all faculties, MIT's professors are distinctly skeptical about the quality and cost of services offered by central organizations. We found through surveying them that they prefer what we call a "hybrid organization" in which they interact on a daily basis with OCW staff residing locally in academic departments, rather than with someone housed in a central organization. That means that OCW will have to place a substantial portion of its staff in the departments. The centralized OCW organization will provide services such as specialized media conversion, administration, and training. These services will be coordinated among the departmentally based OCW staff.

As we have already suggested, the key caveat to the general faculty support for OCW is that it cannot impose an additional time burden on them. It is difficult to overstate the importance of this issue. As a faculty, we operate essentially at capacity, and doing any new task inevitably means not doing something else. The faculty wants the OCW organization to make it as easy as possible for them to participate in the initiative, and many will not do so unless they believe that the level of organizational support will be substantial.

Future Decisions

As with any ambitious project, OCW faces challenges in meeting its goals, including creation of an efficient production organization. Until last spring, OCW was being implemented by a small group of individuals, most of whom will not continue with OCW. In May, MIT recruited a full-time executive director to oversee the program. She will have to build an organization that can produce course Web sites at costs that MIT can eventually cover with its own resources.

In addition, it is by no means certain that MIT staff will carry out all the elements of OCW's production processes. Many services can probably be more efficiently outsourced. Decisions will need to be made about which services are central to MIT's mission and should therefore be done by university staff, and which can be performed by outside organizations.

Choices about technology also must be made. OCW is much closer in spirit to a large-scale publishing initiative than to the traditional educational and research mission that occupies most of MIT's energy. It remains to be seen what mix of commercial and "home grown" technologies might prove useful in developing a publishing workflow that is not only efficient but also responsive to faculty members' needs. It will be several years before we know whether the enormous promise of OCW will be realized. The major

issues of academic policy, intellectual property rights, organizational structure, and funding that OCW has raised within MIT have only been partly resolved. We hope that as we continue to explore these matters, OCW can serve as a model for similar initiatives at other universities around the world.

End Note 1. When OCW was first announced, one of the unresolved issues was how MIT would pay for the introduction of the project. In July 2002, MIT received grants totaling \$11 million, contributed in equal amounts by the Andrew W. Mellon Foundation and the William and Flora Hewlett Foundation. In addition, MIT committed \$1 million of its own funds to OCW during the initial two-year funding period. [Back to text](#)

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