Comparative Features Analysis of Leading Course Management Software

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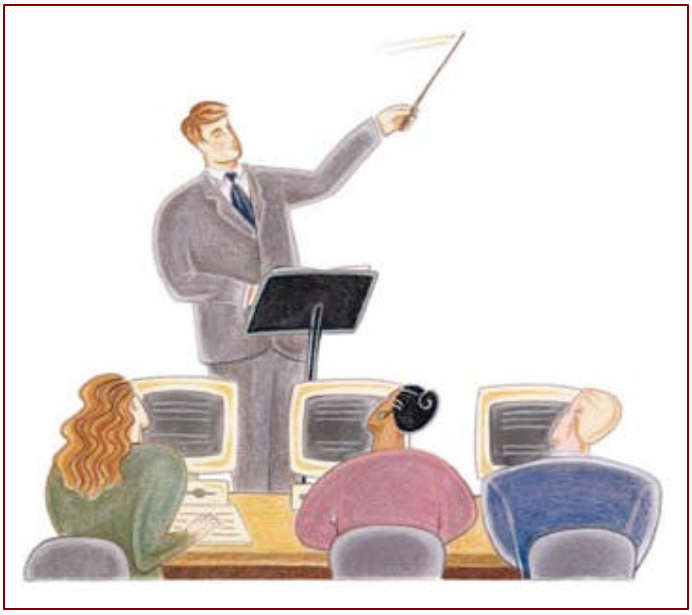

Summary

During the spring and summer of 1999, The University of the Future, LLC, (*Future*U) completed a research study to identify a robust set of features that support teaching and learning online and then compared six leading course management software (CMS) packages to determine the extent to which each one of the six packages provides the desired features. A report on the results of this research was published on October 13, 1999. A month following the initial study, WebCT submitted an updated feature list based on version 2.0 of their product. The current report reflects integration of these updated features into the narrative and tables.

The purpose of this investigation was twofold: 1) to help academic institutions make informed decisions when they purchase or upgrade CMS products and 2) to help CMS developers make informed decisions when they plan for product development and marketing.

The research identified a total of 94 desired features. A comparison of the six packages reveals that WebCT offers the most features (82), followed closely by *Web Course in a Box* (79). These were followed next by a tie between Blackboard's CourseInfo (75) and the Embanet implementation of IntraLearn (75). The other two packages in the study were WBT System's TopClass (48) and Virtual Learning Environments VirtualU (65).

Introduction

Background

Higher education is experiencing a growing demand for access to technology-mediated or "online" learning. Reduced costs and increased functionality are allowing more and more academic decision makers to justify technology-mediated learning initiatives. One of the fastest growing areas in the technology-mediated educational arena is the use of the Internet by colleges and universities to supplement face-to-face courses with online components and to deliver some courses completely online.

Until recently, most academic administrators sought, above all, to minimize the cost of technology mediation. Now, attitudes are evolving and many administrators are acknowledging that a significant investment in online education can yield valuable long-term benefits that are well worth the cost. As a result, they are beginning to increase support and funding for online learning.

Until recently, most vendors have been promoting their products as a way to lower costs. But this has not proven true in practice. *Initial* investment requirements can be especially high. The payoff comes not in cost savings but in support for teaching existing courses and higher revenue from increases in the size of learner populations that can be served. Online delivery allows an institution to serve a larger population and to serve its current students better, thus attracting more dollars from both sources.

Course Management Software

Key to a wise online initiative is robust course management software (CMS) that is easy to learn; easy to use; flexible; rich in features for learning, teaching, and administration; easy to integrate with other software and easily upgraded to future versions.

More than a dozen players are currently struggling to grab market share in the dynamic, rapidly evolving CMS marketplace. Armed with a greater understanding of their competition and customer needs, they can make informed choices about how to invest in product enhancement and market positioning. Their customers can make more fully informed decisions about which course management software will best meet their needs. FutureU intends this report to address both of these purposes.

Methodology

FutureU searched popular periodicals such as *Byte*, *InfoWorld*, *PC Magazine*, *PC Week*, and *Syllabus*, as well as several books and six university Web sites for reviews and comparisons of CMS packages. The search revealed mentions of more than a dozen different CMS products. (See Appendix 2 for a complete list of the articles and Web sites searched in this study.)

Products Reviewed.

A decision was made to focus on the five CMS products most frequently recommended for use in academic settings:

- Blackboard's *CourseInfo*
- MadDuck Technologies' *Web Course in a Box* (WCB)
- Universal Learning Technology's *WebCT*
- Virtual Learning Environment's *VirtualU*
- WBT System's *TopClass*

A sixth vendor, *IntraLearn*, is a relatively new entrant into the CMS arena and is included, as a point of reference for what is technologically feasible today. However, it should be pointed out that currently available third-party products allow the integration of the widest variety of technology-driven features—as other vendors reviewed in this study so aptly demonstrate.

IntraLearn's current market strategy is to function as a distributor, selling only to third-party providers such as Embanet. For this reason, FutureU chose the Embanet implementation of IntraLearn for this study.

Groupware software such as FirstClass and Lotus Notes were not considered in this comparison because they tend to lack specific tools for learning and teaching. Lotus Notes LearningSpace was also eliminated because its much more complex tool set makes it difficult to compare with the more standard CMS products.

Products such as Asymetrix' *Toolbook* and Macromedia's *Authorware* were not included because they are primarily intended for corporate training, not higher education. And, although they offer a rich set of features that make them useful in academic education, they are enough different to warrant a separate evaluation that explores their unique feature sets.

Several companies, notably Blackboard, Convene, Embanet, eSocrates, eCollege, and Jones University market additional consulting and implementation services as well as course management software. These services are not evaluated in this report.
In future studies, FutureU will evaluate groupware, comprehensive consulting solutions, and third-party providers of CMS access in greater detail.

Assumptions.

At *Future*U, we take the position that satisfaction with any one CMS product is highly subjective and that any attempt at quantitative analysis would therefore be fruitless. Instead, we have developed a check list of desired features and indicated whether each of the six CMS products either has or does not have each feature. Similarly, we have made no attempt to evaluate the effectiveness of specific features, because we believe that idiosyncratic learning and teaching styles can profoundly influence an individual's assessment of effectiveness. The single quantitative measure we do provide is a score of the number of features in a given CMS product as a function of the total number of features evaluated in this study.

The feature list itself was assembled using three criteria. To be included on the list, a feature must be:

- Considered essential for online teaching and learning by *Future*U technical staff
- Frequently requested by FutureU clients
- Frequently mentioned in third-party reviews

The assumption was made that the ideal learning environment, whether face-to-face or online, would routinely support students first, faculty second, and administration third. Features that support students were divided into two categories: learning tools and collaboration tools. Features that support faculty were divided into: authoring tools and course management tools. A handful of "back-office" administrative features were also included on the list of desired features.

For a complete list of the features considered in this study, see Appendix 1: Basic Feature List.

Data Sources

Data for this study came directly from the six vendors, supplemented with information from current journal articles and from Web sites that offer access to local evaluation initiatives.

An email message went out from FutureU to each of the six companies whose products we hoped to evaluate. Attached to the email was an Excel spreadsheet containing our best

guess as to whether the company's product did or did not have each of the desired features. We asked each company to confirm whether it offered each of the features and to explain, in writing, any disagreements with our assumptions. We then revisited each software vendor's demo site to confirm for ourselves that their answers were indeed true. Several vendors chose to answer "Coming Soon" instead of "No" to particular features. Since software release dates are often delayed, we chose to convert all such answers to "No" and leave it up to the marketplace to keep tabs on future changes.

Discussion of Data

The research led to a list of 94 features deemed desirable for a course management software package. The total list was then divided into three categories and five subcategories:

- Student Tools (40 features)
- Learning Tools (18 features)
- Collaboration Tools (22 features)
- Faculty Tools (39 features)
- Authoring Tools (14 features)
- Course Management Tools (25 features)
- Administration Tools/Costs (15 features)

A comparison of the six most popular products revealed the following:
WebCT version 2 has the highest number of desired features (82 out of 94, or 86% of the total list). *Web Course in a Box* version 4, has the next highest number of features (79 out of the 94, or 84% of the total list). The Embanet implementation of IntraLearn and Blackboard's CourseInfo tied for the second highest number of features at 75 (80% of the total list). A noticeable gap appears between these and VirtualU, with 65 (69%) of the desired features. By far the lowest product in terms of number of desired features is WBT System's *TopClass*, with only 48 features, or 51 percent of the desired total.

Five of the CMS products rely on third-party providers for at least some of the desired features. Tables 1-4 use the abbreviation "3p" to identify features provided by third parties.

WCB offers 12 features, VirtualU offers 9, and WebCT offers 4 features this way. FutureU advocates open design standards and ease in integration of third-party add-ons. So we suggest that reliance on outside vendors should be perceived not as a negative but rather as an indicator of adaptability and potential for easy future expansion.

For WCB, the "outside" features are: library and information access, annotation/markup, glossary help, study skill building, access to newsgroups/list servs, team building, advanced course design, automated table of contents and indexing, course search engine, Web search tools, calculation of class grade averages, and online-student/faculty orientation

For VirtualU, the third-party features are whiteboarding, both audio and video teleconferencing, self-assessment exercises, Web search tools, timed and repeatable quizzes, and timed and repeatable exercises.

For WebCT, the third-part features are access to ListServs/News groups, and teleconferencing, both video and audio.

IntraLearn and CourseInfo also use third-party providers for a few features: IntraLearn for three types of teleconferencing (audio, video, and live text-based) and library/information access; CourseInfo for chat and chat archiving.

Tables 1 through 5 illustrate which features are present or absent in each of the six CMS products.

Table 6 compares the six products on each of the five feature set subcategories: learning, collaboration, teaching, course management, and administration..
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Table 1. Comparisons of features among CMS products evaluated: Learning Tools. Key:
Y=Yes, N=No, 3p=Made available through third party.

	Blackboard	**WBT Systems**	**VLE**	**MadDuck**	**WebCT, Inc.**	Embanet
	CourseInfo	TopClass v.3.1	VirtualU v.2.4+	WCB v.4	WebCT v.2	IntraLearn
Learning Tools						
Bookmarking/last place visited	Browser	Browser	Y (chosen views)	Browser	Built in	Y
Student area						
Private directory on course server	Y	N	Y	Y	Y	Y
Batch upload	Y	N	N	N	Y	N
Shared work (see Work Group Areas)	Y	N	Y	Y	Y	Y
Team building	N	N	Y	Y;Y(3p)	Y	Y
Library and Information Access	N	N	Y	Y(3p)	Y	Y(3p)
Annotation (markup) capability	N	N	N	Y(3p)	Y	N
Glossary help (student generated)	N	N	instructor-generated	Y(3p)	Y	Y
Course Index/Search Engine	Y	Y	N	Y(3p)	Y	Y
Learning Exemplars/Guidance	Y	Y	Y	Y(3p)	Y	Y
Access to own grades	Y	Y	Y	Y	Y	Y
Progress tracking	Y	Y	N	Y	Y	Y
Assignment reminders	N		N	N	N	N
Comparison to class averages	N	Y	Y (visual)	N	Y	Y
Student guide	Y	Y	Y	Y	Y	Y
Self-assessment exercises	Y	Y	Y(3p)	Y	Y	Y
Study skill building	N	N	Y	Y(3p)	Y	Y
Student Web pages	Y	N	Y	Y	Y	N

Table 2. Comparisons of features among CMS products evaluated: Collaboration Tools. Key: Y=Yes, N=No, 3p=Made available through third party.

	Blackboard	**WBT Systems**	**VLE**	**MadDuck**	**WebCT, Inc.**	Embanet
	CourseInfo	TopClass v.3.1	VirtualU v.2.4+	WCB v.4	WebCT v.2	IntraLearn
Collaboration Tools						
Discussion Options						Y
Asynchronous						Y
Email (one to one)	Browser/Forms	Built in	Browser/Forms	Browser	Built in	Y
List Servs/Newsgroups (many to many)	Y	N	N	Y(3p)	Y(3p)	Y
Text-based conferencing (many to many)	Y	Y	Y	Y	Y	Y
Bulletin Board (one to many)	Y		N	N	N	Y
Synchronous						Y
Chat	Y(3p)	N	Y	Built in	Y	Y
Archive	Y(3p)	N	N	Y	Y	Y
Whiteboard	Y	N	Y(3p)	Built in	Y	Y
Archive	N	N		Y	Y	Y
Teleconferencing	N	N	Y(3p)	N	Y(3p)	Y(3p)
Video	N	N	Y(3p)	N	Y(3p)	Y(3p)
Audio	N	N	Y(3p)	N	Y(3p)	Y(3p)
Live, text-based conferencing	Y	Y	Y	Y	Y	Y
File sharing	Y	Y	Y	Y	Y	Y
Email attachments	Y	N	N	Y	Y	Y
Message attachments	N	N	Y	Y	Y	Y
File storage	Y	Assignments only	Y	Y	Y	Y
Private directory on course server	Y	N	Y	Y	N	Y
Public file library	Y	Y	Y	Y	Y	Y
Work Group Areas	Y	N	N	Y	Y	Y
Group Web pages	N	N	N	N	Y	Y
Group conferences	Y	?	Y	Y	Y	Y
Team building	N	N	Y	Y(3p)	Y	Y

Table 3. Comparisons of features among CMS products evaluated: Authoring Tools. Key: Y=Yes, N=No, 3p=Made available through third party.

	Blackboard	**WBT Systems**	**VLE**	**MadDuck**	**WebCT, Inc.**	Embanet
	CourseInfo	TopClass v.3.1	VirtualU v.2.4+	WCB v. 4	WebCT v.2	IntraLearn
Authoring Tools						
Course planning	Y	Y	Y	Y	Y	Y
Course design	Y	Y	Y	Built in;3p	Y	Y
Course templates	Y	Y	Y	Y	Y	Y
Automated glossary	N	N	N		Y	Y
Automated course TOC/index	Y	N	Y	Y(3p)	Y	Y
Course search engine	Y	Y	N	Y(3p)	Y	Y
File management	Y		Y	Y	Y	Y
Instructor file storage	Y	N	Y	Y	Y	Y
Batch upload	N	Y	N	N	Y	N
Batch delete	N	Y	N	N	Y	N
Instructor guide	Y	Y	Y	Y	Y	Y
Course exemplars	Y	Y	Y	Y	Y	Y
Web search tools	N	N	Y(3p)	Y(3p)	N	Y
Multimedia capability	Y	Y	Y	Y	Y	Y

Table 4. Comparisons of features among CMS products evaluated: Course Management Tools. Key: Y=Yes, N=No, 3p=Made available through third party.

	Blackboard	WBT Systems	VLE	MadDuck	WebCT, Inc.	Embanet
	CourseInfo	TopClass v.3.1	VirtualU v.2.4+	WCB v.4	WebCT v.2	IntraLearn
Course Management						
Instructor information pages	Y	Y	Y	Y	Y	Y
Course info/syllabus	Y	Y	Y	Y	Y	Y
Course calendar/schedule	Y	Y	Y	Y	Y	Y
Announcements/Bulletins	Y	Y	Y	Y	Y	Y
Student management						
Student presentation/project pages	N	Y	Y	Y	Y	Y
Registration	Y	Y	Y	Y	Y	Y
Batch upload	Y	Y	Y	Y	Y	N
Batch delete	Y	Y	Y	Y	N	N
Attendance/Participation Tracking						
Attendance	Y	Y	N	Y	Y	Y
Participation	Y	Y	N	N	N	Y
Gradebook						
Student access to own data	Y	Y	Y	Y	Y	Y
Automatic assignment progress tracking	Y	N	N	Y	Y	Y
Assignment reminders	N	N	N	N	N	N
Automatic grade calculation	N	N	Y	Y	Y	Y
Class averages auto calc	N	N	Y	Y(3p)	Y	Y
Assessment						
Quizes	Y	Y	Y(3p)	Y	Y	Y
Timed	Y	Y	Y(3p)	Y	Y	Y
Repeatable	Y	Y	Y(3p)	Y	Y	Y
Exercises	Y	N	Y(3p)	Y	Y	Y
Timed	N		Y(3p)	Y	N	Y
Repeatable	Y		Y(3p)	Y	Y	Y
Course Archive/Backup	Y		Y	Y	Y	N
Course replication	Y	Y	Y	Y	Y	N
Course revision	Y	Y	Y	Y	Y	Y

Online Help/FAQs	Y	Y	Y	Y	Y	Y

Table 5. Comparisons of features among CMS products evaluated: Administration Tools/Costs. Key: *Y=Yes, N=No, 3p=Made available through third party.*

Administration Tools/Costs	**Blackboard**	**WBT Systems**	**VLE**	**MadDuck**	**WebCT, Inc.**	**Embanet**
	CourseInfo	TopClass v.3.1	VirtualU v.2.4+	WCB v.4	WebCT v.1.3.1	IntraLearn
Automated Registration	Y	Y	Y	Y	?	Y
Security	Y	Y	Y	Y	Y	Y
Tech Support	Y	Y	Y	Y	Y	Y
Student Transcript	Y - per course	N	Y - per course	Y - per course	?	Y
Standard						
Open	Y	N		Y	Y	Y
Proprietary	Y	Y		N		Y
Costs						
Hosting Service	Y			Y		
Demo course - demo only	Y, Free			Y, Free	Y	
Demo course - real course	Free		N	Free (6mo)	Free (4mo, 50 Students)	
Example courses	Y			Y	Y	
Per Course Fee (6mos)	N			$200 setup, $50/mo Unlimited courses	$210	
Training	Customized	$900--one day	Customized	$1,500/day &	Customized	$345 ea
	Price varies		Price varies	Self-paced Modules	Price varies	$6K/25 +Customized
Site License						
Free server version demo	Y		N	Y	Y	N
Per chair	N		N	N	N	<500=$40ea, >500=$10ea
One-time per version	N		N	$4K/server	N	$10K 1st yr
Annual	$4.5K/server	$750/25 students	$5K/server	N	$3K/server	
Support Fee	Included	$3K/year	Included	Included	Included	Included
Upgrades	Per version			Per version	No charge	$5K 2nd+ yrs
Platform						
Windows NT	Y	Y	Y	Y		
Unix	Y	Y	Y	Y	Y	
Other		Linux		Linux		

Annualized License Fee	Blackboard	WBT Systems	VLE	MadDuck	WebCT, Inc.	Embanet
	CourseInfo	TopClass v.3.1	VirtualU v.2.4+	WCB v.4	WebCT v.1.3.1	
for unlimited number of Students	**$4,500**	**$6,000**	**$5,000**	**$4,000 yr 1** **$2,000 yr 2+**	**$3,000 yr 1** **$3,000 yr 2+**	

Intralearn is not included in the table above, because Embanet does not sell server licenses. Intralearn itself sells server licenses several at a time for a middle five-figures.

Table 6. Comparative scores on the presence and absence of specified feature sets. |

	Blackboard	WBT Systems	VLE	MadDuck	WebCT, Inc.	Embanet
	CourseInfo	TopClass v.3.1	VirtualU v.2.4+	WCB v.4	WebCT v.1.3.1	IntraLearn
Learning Tools (out of 18)	11	8	12	15	16	14
Collaboration Tools (out of 22)	17	6	15	17	20	22
Authoring Tools (out of 14)	11	9	10	11	13	12
Course Management Tools (out of 25)	23	17	21	23	21	20
Administration Tools/Costs (out of 15)	13	8	7	13	12	7
Score	**75**	**48**	**65**	**79**	**82**	**75**
Score as a % of Total (out of 94)	**80%**	**51%**	**69%**	**84%**	**86%**	**80%**

Feature Descriptions

Student Tools

Students use two broad categories of tools from the list of desired CMS features: tools for individual learning and tools for online collaboration.

Learning Tools

Bookmarking. The nonlinear nature of the Internet makes it hard for students to keep track of where they left off in their work. A bookmarking tool allows them to stop at any point and return later to the exact same spot. Given how much time students spend retracing their steps in the online environment, such a tool is much more than a mere convenience. Because most Web browsers include a bookmarking feature, and all six of the CMS products in this study are browser accessible, all six have access to this feature. WebCT also has its own built-in bookmarking system.

Student Area. A specific area set aside to organize and share ongoing work is another important feature of a collaborative work environment.

Library and Information Access. For accreditation purposes and to fully support distance learners, online access to library and information services is essential. Most CMS products ignore this feature, requiring their customers to implement their own library and information services. IntraLearn provides a place for internal links to existing library and information services. WCB offers a third-party planning tool for creating or enhancing library and information access for online learners. CourseInfo, VirtualU, and WebCT allow no specific library access help, but they all, as well as WCB offer easy interface with existing library access points and they are all open to the Web. WebCT alone offers a special "Reference Tool" that allows resource and content catalogs to be placed wholly within any give course Web site. TopClass provides no help in this area.

Annotation. WebCT is the only software with a built-in tool that allows instructors to mark up assignments and that allows students to mark up documents created collaboratively. WCB offers a link to a third-party annotation tool, but the remaining vendors provide no system for electronic annotations.

Glossary. Every good CMS package includes a glossary that is either instructor generated and/or generated by the learners themselves. VirtualU and WCB both provide a Web-based template that allows the instructor to create a glossary, but neither of these products has an automated interface to its glossary template. WebCT and IntraLearn both provide built-in, fill-in-the-blanks glossary generators. CourseInfo and TopClass do not support this feature.

Course Index/Search Engine. The ability to search an entire course Web site helps both learner and instructor to deepen learning through review. CourseInfo, TopClass, WebCT, and IntraLearn all offer automatically generated course indices and course-wide search engines. VirtualU plans this feature but doesn't currently offer it. MadDuck has identified third-party search engines that can be applied to any WCB generated course, provided the instructor is willing to turn off course-access security for the short indexing period.

Learning Exemplars/Guidance. All six CMS vendors claim to provide student guidance and learning examples. As of this report date, however, WCB is the only product with a self-paced or instructor-led online course to prepare students to use the Internet for learning; included are specific guidance for creating an effective online study environment, mastering the study habits necessary for success in the online environment, and handling the most common technology issues.

Access to Grades. When students have access to their own grades, they can better track the progress of their own learning. All six CMS vendors give student a way to access their own grades. TopClass, VirtualU, WebCT, WCB, and IntraLearn also let students compare their own grades to the class average. None of the vendors provide automated assignment reminders.

Student Guide. All six CMS packages have a printed guide for documenting student-centered functions. VirtualU also includes examples to help guide students through the experience of learning to use the online classroom. As stated above, WCB offers a third-party course in how to maximize online learning.

Self-Assessment Exercises. Students deepen their learning when they can check their own progress as they make their way through an online course.. The simplest tool for this purpose is a self-scoring quiz/exercise generator that reports measurements such as score, elapsed time, and number of attempts. This feature can also be used to create scored tests for use in assessing a student course grade. All the vendors in this study offer some sort of quiz generator that can be used for self-assessment exercises. Although third-party providers of online quiz generators are numerous, VirtualU is the only vendor to offer a third-party solution for this feature.

Study Skill Building. Many first-year college students have such poor study skills that they are encouraged to take remedial education in the basics of studying. The online environment is such that online students must be even better organized, more disciplined and more skilled at time management than their face-to-face counterparts. Tools for building study skills can range from a simple review tool (e.g., a glossary builder) to a full course on study-skills. Among the six providers in this study, WCB is alone in offering a third-party course that covers the study skills necessary for the online environment.

Student Web Pages. Student Web pages help the virtual learner get organized and share information with other students. CourseInfo, VirtualU, WCB, and WebCT all give

students a way to create their own personal Web home pages. WCB also offers two additional kinds of student pages not offered by any of the other vendors: Project and Portfolio pages. VirtualU offers a "student space" that displays a graphical desktop to represent a dormitory study corner, complete with desk, dictionary, calendar, and other metaphorical features.

Collaboration Tools

Research has shown that the most effective learning model for the online classroom encourages a high degree of interaction and collaboration among learners.(1) This suggests that tools for facilitating collaboration may be the most important aspect of any course management software product. For purposes of this study, FutureU identified the minimum set of tools necessary for effective online collaboration. These tools include features that facilitate discussion, simplify document sharing, and simplify group work.

Discussion Options. Discussion options for collaboration should include at least email (for one-to-one discussions) and either mailing lists/list servs or text-based conferencing (for many-to-many discussions). Bulletin board or classified listings that allow one-to-many communications are also useful but not essential.

Depending on the course design, synchronous discussion tools are also helpful. Especially when the content includes graphic images or complicated symbols, a whiteboard function is helpful. Synchronous chatting and video or audio conferencing can add a dimension to the interaction that many find helpful, but these features are not essential for successful collaboration and can be counter-productive unless well managed by a clear set of participation rules.

- A mailing list/list serve function creates a discussion environment in which the learner may choose among the following options for delivery of discussion forum content:
- Visit discussion forum Web page
- Receive discussion forum messages by email
- Receive email notice of new messages in discussion forum
- Receive email summary of new messages from discussion forum

A quick look at Table 2 shows that the products are "all over the map" in how they deliver collaborative discussion tools and in which ones they choose to offer. There is so much variation, in fact, that future upgrades and new product developments seem likely in this area.

All six packages offer some type of one-to-one email service. Among the hundreds of students FutureU has dealt with, a general preference is reported for the approach to email taken by CourseInfo, VirtualU, and WCB. All three of these CMS packages use the email function built into the Web browser rather than proprietary email like that offered

by TopClass or WebCT. This means that students who already have their own email accounts on an ISP or the campus server, don't have to check multiple email in boxes to manage their communications.

Both CourseInfo and IntraLearn offer their own many-to-many list serve/newsgroup function, while WCB offers access to third-party newsgroup software, if desired. All six packages offer both synchronous and asynchronous, text-based conferencing, but only CourseInfo and IntraLearn offer a bulletin board where students may post one to many announcements. WCB and WebCT offer an announcement function for use by the instructor, but not accessible to students. WebCT claims to offer a bulletin board function for students, but this is a misnomer as what they are referring to is the text-based conferencing function. Though this is a moot point, as any system that has text-based conferencing can create a discussion forum that is set aside for posting one-to-many notices. So you could answer "yes" there is a bulletin board for any CMS package that offers text-based conferencing (asynchronous, not chat).

All except TopClass provide a chat function, either built in or through a third party, although VirtualU's chat does not have archiving capabilities. CourseInfo, VirtualU, WCB, WebCT and IntraLearn all offer a whiteboard. TopClass does not. VirtualU, WebCT, and IntraLearn offer audio or video teleconferencing provided by third parties.

File Sharing. Participants in an online discussion must have the ability to share documents and images from the content of their course. This need can be met either by attaching shared files to email or discussion messages or by providing a file storage space where files can be uploaded and downloaded with permission.

It is useful to include a private storage space where students can organize any files they intend to share, plus a separate file space for public access. Restricting access to certain files can be handled either by attaching files to messages and restricting message distribution, or by allowing the file's author to decide who may access their files. Using file attachments is usually easier to implement and teach than setting file access permissions.

All of the CMS products reviewed provide for file sharing. CourseInfo, WCB, WebCT and IntraLearn can all accommodate email file attachments. CourseInfo, VirtualU, WCB, WebCT and IntraLearn all allow attachments to discussion forum (conferencing) messages. TopClass allows file storage for assignments only, while the rest, with the exception of WebCT, have full file storage capabilities. All have a public file library and all but TopClass offer students a private directory on the course server.

Work Group Areas. True collaboration requires online work areas with controlled access for flexibility in forming and reforming collaborative groups as the course unfolds.

Group discussion areas provide private space for the group to organize and track collaborations. Group Web pages provide a place for group members to display the unfolding results of their work together. Course materials or processes that teach team building and team learning skills are also helpful and can sometimes be built into the CMS design or provided as an add-on.

CourseInfo and WebCT allow users to create multiple groups and provides each group with their own set of communication tools as well as file sharing. All of the products provide for group conferences, with the exception of TopClass. All except TopClass have a team building feature. CourseInfo, WCB, WebCT, and IntraLearn all offer a work group area and WebCT and IntraLearn can accommodate group Web pages.

Faculty Tools

Faculty members use two types of tools from the list of desired CMS features: tools for authoring their courses and tools for managing their courses.

Authoring

Course Planning, Design, Templates. Putting a course online is more than simply converting existing course materials to Web pages. CMS packages automatically shape course design by the layout and structuring tools they use to create course pages. By definition, then, every CMS package offers some help in planning and design. For purposes of this report, however, this feature is considered present only if an explicit planning or design aid is offered, which it was in every case.

Automated Glossary. See Glossary under Learning Tools.

Automated Course TOC/Index/Search Engine. See Course Index/Search Engine under Learning Tools.

File Management. File management tools include file uploading and downloading aids and file storage space on the course server. The ideal is to include both one-at-a-time file transfer and batch file transfer. Only TopClass and WebCT offer batch upload and batch delete. IntraLearn offers batch uploading, but not batch deleting. CourseInfo offers a facility to batch upload a group of files that may exist in a web structure or a multitude of files that are interconnected. All other packages require that files be moved or deleted one at a time.

Instructor Guide/Course Exemplars. Most people learn from examples. Course instructors/developers find value in an instructor's guide and examples of pedagogically sound online courses All six vendors claim to offer course examples and they all offer

printed instructor documentation. VirtualU offers both design and teaching aids. WCB offers these features through a third-party provider.

Web Search Tools. Students must be able to search a course site quickly to locate or return to key information while studying. Because access to course Web pages is usually controlled by the instructor, it makes sense to provide the instructor with the ability to index the course Web pages and then make that index and/or a search engine of the index available to students. Only IntraLearn has built in Web searching tools. CourseInfo, TopClass and WebCT don't support this feature at all. VirtualU and WCB offer this feature by utilizing third-party search engines.

Multimedia Capability. When used appropriately, graphic images from audio, video and VRML files can spice up a course and make it more engaging. Most online classrooms are text-based, however, and can function effectively without multi-media elements.

When some or all students have a limited bandwidth, a simple, text-based format avoids delays in downloading and ensures that everyone has equal access to course materials.. All of the CMS packages in this study allow for multimedia, although each one does it in a slightly different way. WebCT, VirtualU, and WCB all use hyperlinking to uploaded files or Web URLs and require that the student's desktop provide the client application to play the multimedia file if it has something other than a Web-based format (such as PowerPoint slides or Lotus ScreenCam files).

IntraLearn alone offers some built in multimedia players. However, any open standard CMS (these include CourseInfo, VirtualU, WebCT and WCB in the present study) could easily meet the need for multi-media by publishing a link to, for example, Jasc Software's "Quick View Plus" file viewer (downloadable from ZD Net's Shareware Software Library). Instructors and students could install this file viewer on their desktops and view most files without having to use a client application.

Course Management

Instructor Information Pages. While not absolutely essential, contact and biographical information about the instructor adds an element of efficiency and personality to a CMS environment. For students in distant locations, it can help make a virtual experience more "real." All the vendors in this study routinely offer this feature.

Course Pages. CMS packages have perhaps their greatest impact on course design through the type of course page templates they provide. Most course management software includes, at least, pages for a syllabus, a calendar, announcements, and course contents.

Student Management. One of the biggest reasons for buying a CMS package is to track and manage student participation in the course. The major features in this category

include student course registration, , attendance and participation tracking, a gradebook, assessment tools, and a place for students to post their assignments for instructor comments.

All packages offer a specific page or pages for student presentations and projects. CourseInfo and WebCT offer student pages that can be used for either groups of students or single individuals and allow individual students to post documents and other project files that they have created during a course.

"Attendance" refers to whether or not a student visited the course. "Participation" refers to whether or not the student posted messages, how many and how long. VirtualU does not offer attendance tracking. VirtualU and WCB fail to offer participation tracking. We were unable to determine the exact nature of the participation tracking offered by CourseInfo, TopClass, and IntraLearn; to qualify, a vendor must provide a way of knowing what has been read, by whom, and when. It was unclear from our analysis whether these vendors met these criteria. If not, then their products probably only track attendance, not participation .)

None of the vendors offers automatic student assignment reminders, a feature that would work in conjunction with the assignment calendar to send notices automatically to students when due dates or other event dates are approaching.

CourseInfo, WebCT and WCB automatically calculate the students grade as they take tests and quizzes in the system. In addition both store this information in the online gradebook. TopClass does not support automatic grade calculation or calculation of class averages. WCB calculates class averages by exporting the gradebook to a spreadsheet. All six vendors offer timed and repeatable quizzes and all but TopClass offer timed and repeatable exercises. In most case, the same tool generates both; quizzes go in the gradebook, exercises don't, but otherwise the procedure is identical. VirtualU relies on third-party providers for both of these functions.

Course Archive/Backup/Replication. CMS customers want an easy way to replicate, back up, and archive courses as they unfold. CourseInfo, TopClass, VirtualU, WebCT and WCB offer functional archiving, backup, and replication of courses. It is unclear how TopClass does this and IntraLearn does not (as reported by Embanet).

Course Revision. All six CMS packages include easy-to-use tools for modifying an existing online course.

Online Help/FAQs. It has become a universally acceptable standard to provide a list of frequently asked questions and answers along with at least email access to a help desk for learner and instructor support. All six vendors provide this feature.

Administration Tools

Automated Registration. More and more institutions are asking for a way to integrate course management software into their existing registration process. This usually requires that the CMS be compatible with a database standard such as ODBC. If such compatibility is not available, the next best capability is an automated registration system that allows batch uploads of student information, so that CMS administrators can easily import data that has been exported from an existing registration system.
Among the six vendors in this study, only IntraLearn is currently ODBC compliant and even they don't offer any help integrating with existing administrative databases. IntraLearn also offers real-time order processing and student registration. All the other vendors offer batch uploading. So far, no one offers a direct interface with administrative databases although WebCT reports partnerships with SCT/Banners and PeopleSoft to do this for their products.

Security. Security tools restrict access to, and control modification of, course pages. CMS customers expect it. Most CMS packages that use open standards also support browser security, which provides secure transactions on the Web. Customers are also starting to ask for automatic scanning for virus contamination in uploaded and downloaded files. This is less of a concern for servers using the UNIX operating system. WebCT offers virus scanning on shared files. All others rely on third parties for virus scanning. All of the vendors provide access security.

Tech Support. CMS customers expect access to support 24 hours a day, seven days a week. Many vendors provide this with FAQs and email; however, most customers also want access to telephone support.

All six of the vendors in this study offer 24/7 tech support by email and most offer some telephone call back service. Apparently no one offers live phone coverage on a 24/7 basis.

Student Transcript. Another function that institutional administrators increasingly request is the ability to track a learner's online participation and automatically generate a transcript of any completed course. Among the six vendors in this study, only IntraLearn WebCT, and VirtualU offer student transcripts.

Standards. Because CMS products and vendors are evolving so rapidly, smart customers want the ability to transport course files from one CMS environment to another. CMS vendors that embed some or all of their product features in a proprietary platform make it difficult or impossible for their customers to transfer course files to a different platform, forcing course developers to start over almost from scratch if their department or school switches platforms. By contrast, an open platform utilizing Internet and Web standards allows the course developer to create course pages only once and then transport them easily from one CMS package to another and back again if necessary. Although

CourseInfo, WCB, WebCT, and IntraLearn all claim open standards for their products, close examination shows that only CourseInfo and WCB are truly open. Both WebCT and IntraLearn have proprietary elements within their offerings that disallow full Web-based compatibility. Blackboard (manufacturer of CourseInfo) claims to have a translation process to convert WebCT courses to CourseInfo.

Platform. Most CMS packages are available in at least the UNIX and Windows NT platforms. CourseInfo, TopClass, VirtualU, WCB, and WebCT are all available for the UNIX platform. CourseInfo, TopClass, VirtualU, WCB, WebCT and IntraLearn run in Windows NT. TopClass and WCB offer a Linux version in addition to NT and UNIX. (Note: In most instances, if a CMS package can run in UNIX it can run in Linux).

Cost. For purposes of this report, the following costs were evaluated:

- Hosting service
- Demos
- Training
- Site license

It is safe to say that there is no pricing standard in the CMS market niche. The way price is calculated and actual pricing varies dramatically from vendor to vendor. Most vendors charge a license fee for each server. The cost of TopClass and Embanet's implementation of IntraLearn increases as the number of seats goes up.

Table 5 shows the various pricing schemes for all six vendors.

In summary, WCB and WebCT appear to be the least expensive products, with WCB edging out WebCT over time.

With WCB, you pay nothing for the second and subsequent years unless you upgrade. If you do upgrade at (50% of full price) then the difference in price between the two products breaks down as follows:

Package	**WCB**	**Web CT**
Year 1	$4,000 (original license)	$3,000 (annual fee)
Year 2	$2,000 (upgrade)	$3,000 (annual fee)
Year 3	$2,000 (upgrade)	$3,000 (annual fee)
Total	**$8,000**	**$9,000**

This projection assumes that both vendor's prices will remain constant. This is highly unlikely over a several year period. But we can conclude, that WCB and WebCT are competitively priced at the present moment.

At *Future*U we're always interested in a diversity of experience and opinion. If you want to join in a discussion about the pros and cons of the Course Management Software reviewed here, drop in to our Online Learning Exchange and join the discussion forum to post your contributions.

[http://www.futureu.com/cgi-local/ikonboard/forums.cgi?forum=10]

Notes:

[1] Harasim, Linda, Starr Roxanne Hiltz, Lucio Teles, and Murray Turoff. *Learning Networks: A Field Guide to Teaching and Learning Online.* Cambridge, MA: MIT Press, 1995, third printing, 1997.

Appendix 1: Features List

- **Learning Tools**
- Bookmarking/last place visited
- Student area
    - Private directory on course server
    - Batch upload
    - Shared work (see Work Group Areas)
    - Team building
- Library and Information Access
- Annotation (markup) capability
- Glossary help (student generated)
- Course Index/Search Engine
- Learning Exemplars/Guidance
- Access to own grades
    - Progress tracking
    - Assignment reminders
    - Comparison to class averages
- Student guide
- Self-assessment exercises
- Study skill building
- Student Web pages

- **Collaboration Tools**
- Discussion Options
    - Asynchronous
    - Email (one to one)
    - List Servs (many to many)
    - Text-based conferencing (many to many)
    - Bulletin Board (one to many)
    - Synchronous
    - Chat
        - Archive
    - Whiteboard
        - Archive
    - Teleconferencing
    - Video
    - Audio
    - Live, text-based conferencing
- File sharing
    - Email attachments
    - Message attachments
    - File storage
    - Private directory on course server
    - Public file library
    - Work Group Areas
    - Group Web pages
    - Group conferences
    - Team building

- **Authoring Tools**
- Course planning
- Course design
- Course templates
- Automated glossary
- Automated course TOC/index
- Course search engine
- File management
    - Instructor file storage
    - Batch upload
    - Batch delete
- Instructor guide
- Course exemplars
- Web search tools
- Multimedia capability

- **Course Management**
- Instructor information pages
- Course info/syllabus
- Course calendar/schedule
- Announcements/Bulletins
- Student management
    - Student presentation pages
    - Registration
    - Batch upload
    - Batch delete
    - Attendance/Participation Tracking
    - Attendance
    - Participation
    - Gradebook
    - Student access to own data
    - Automatic assignment progress tracking
    - Assignment reminders
    - Automatic grade calculation
    - Class averages auto calculation
    - Assessment
    - Quizzes
        - Timed
        - Repeatable
    - Exercises
        - Timed
        - Repeatable
    - Course Archive/Backup
    - Course replication
    - Course revision
    - Online Help/FAQ

- **Administration (Back Office)**
- Automated Registration
- Security
- Tech Support
- Student Transcript

Appendix 2: Articles and Web Sites referenced in this study.

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Revision History

Please note: The data for this study came directly from the six vendors. As a user, if you disagree with the presence or absence of features for a particular CMS product, please contact the vendor with your feedback. Also post your comments at FutureU.Net:

[http://www.futureu.com/cgi-local/ikonboard/forums.cgi?forum=10]

Revision History	
Date	**Description**
10/14/99	Section added at end of tables page to include vendor and user feedback.
10/20/99	IntraLearn features updated based on email from IntraLearn Executive VP Peter Banhazl
10/21/99	CourseInfo features updated based on email from Blackboard Director of Product Strategy, Stephen Gilfus
10/27/99	WCB features updated based on personal communication from MadDuck VP Steve Saltzberg
10/31/99	Note to users added to report and table page. Minor edits to incorporate vendor feedback.
11/17/99	WebCT feature changes added to bottom of table page based on personal communication from Kathleen Paul, Champion at WebCT.
01/02/2000	WebCT version 2.0 feature set integrated into narrative report and tables.
08/31/2002	Report converted to PDF.
Note: This report compares versions of six leading course management software packages as of January 1, 2000. FutureU plans to update this study as time permits. That study will also provide a measure of how much improvement each product undergoes in the intervening months.	

Corrections Submitted by Users and Vendors after October 13, 1999

From: claude@futureu.com (Claude Whitmyer, CIO)
Date: Wed, 13 Oct 1999

While we checked the accuracy of this report with representative from each vendor, it is always possible that misunderstanding of specific feature definitions may have resulted in answers that are later thought to be inaccurate by those same vendors. In addition, users often report that certain features a vendor thinks are present, either are not really there or don't work as the user would hope.

For both of the above reasons, FutureU invites vendor and user feedback to this report.

At *Future*U we're always interested in a diversity of experience and opinion. If you want to join in a discussion about the pros and cons of the Course Management Software reviewed here, drop in to our Online Learning Exchange (link below) and join the discussion forum to post your contributions.

[http://www.futureu.com/cgi-local/ikonboard/forums.cgi?forum=10]

From: pbanhazl@intralearn.com (Peter Banhazl)
Date: Wed, 20 Oct 1999
I am the Executive VP at IntraLearn Software Corp. and loved the comprehensive job you did on Course Management Systems.

Please note that there was one error in the IntraLearn from Embanet chart...IntraLearn does Batch Loading (doesn't do Batch Deleting, however). The chart had it listed as a No

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From: Joseph Delaney Teaching Excellence Center
Rutgers University

Date: Wed, 20 Oct 1999
I just read your comparison of Course Management Software at and found it very informative and helpful, by far one of the most thorough reports that I have seen to date.

However, I noticed more than a few inaccuracies concerning WebCT (the product that I am most familiar with), and this of course calls into question the accuracy of all of the

data. Rather than just criticize, I thought I would provide some details about WebCT in the event that you want to update your report.

Keep in mind that I do not know the exact criteria by which you define all of the features, but I think that some of the following should qualify for WebCT (version 1.3). Some of this will change with version 2 which is due next month.

These are the areas that I believe are incorrect:

Learning Tools:
(Student Area)
Private Directory: N
Batch Upload: N
Annotation/Markup: N (If I'm wrong about this, I'd love to hear where the feature is hidden)

Collaboration Tools:
(Asynchronous)
Bulletin Board (one-to-many): a qualified "Yes" -- the "student tips" feature does this, but students can shut it off.
Whiteboard: Y
Archive: Y
E-mail attachments: Y
Message attachments: Y
File Storage: N (Y for groups)
Private Directory: N
Public File Library: N

Authoring Tools:
Automated TOC/Index: I'm not sure what you mean by "automated" but this should be "Y". If it really is no, then the entry for "Automated Glossary" should be "N" as well since adding a glossary and index are similar processes.

Batch Upload: qualified "N" -- it supports zipping and unzipping files
Batch Delete: Y

Course Management Tools:
Announcements/Bulletins: Y (same as "Bulletin Board (one-to-many) above)
(Student Management)
Batch Upload: Y
Batch Delete: Y
(Attendance/Participation Tracking)
Participation: Y (although it might not meet your full criteria)
(Assessment)

Quizzes-Timed: Y
Course Archive/Backup: Y
Course Replication: Y

Administrative Tools:
Automated Registration: N
Student Transcript: N
(Costs)
Hosting Service: Y
Annual: $250 - $3000 (based on # of students)
(Platform)
Windows NT: Y

Annualized License Fee
1 Year (for 100 students): $500 ($3000 is for unlimited students)

From: Stephen Gilfus
Date: Thu, 21 Oct 1999 16:43:00 -0400
Claude,
It was a pleasure speaking with you today and I hope to see you at EDUCAUSE . . . . I have included the additional features that seemed to be missing from your evaluation and have added some commentary so that you could easily understand their applicability. I have also included a copy of your web page and marked everything that I changed in RED so you could easily see the impacts on your site. In addition I have recalculated the scores at the bottom of the page for your convenience.

Steve
Director of Product Strategy
Blackboard Inc.

Eval Change

Area = Collaboration Tools
- Message Attachments
Courseinfo allows message attachments in both the email as well as the discussion board communication areas.

- Group Pages
CourseInfo allows users to create multiple groups and provides each group with their own set of communication tools as well as file sharing.

- Team Building
CourseInfo allows users to contact one another through the email specific users and

allows them to collaborate in team environments through the use of group pages. Motivational team building is provided through group collaboration and file sharing.

Area = Authoring Tools
- Batch Upload
This technical facility allows users to batch upload a group of files that may exist in a web structure or a multitude of files that are interconnected.

Area = Course Management Tools
- Student Presentation/Project Pages
The group areas can be used for either groups of students or single individuals and allow individual students to post documents and other project files that they have created during the course.

Automatic Grade Calculation
- CourseInfo Automatically calculates the students grade as they take tests and quizzes in the system. In addition this infromation is stored in the online gradebook.

- Timed Assessments
Instructors to allocate timed sessions for tests and quizzes.

Area = Administration Tools
- Automated Registration
CourseInfo provides all the necessary tools required to batch upload students to the system.

- Claude you probably can't see this at a system basis as you need administrative access. I would be more than happy to provide you with temporary access if needed, or I could show you directly at EDUCAUSE.

- Student Transcript
A transcript of how the student is doing in the course is stored in the gradebook and can be printed upon request. Simply search by user and pull up all their grades for the course.

- Demo/Real Course
Instructors can create a course on Blackboard.com for no cost and can keep the course their indefinitely.

Table 6. Comparative scores on the presence and absence of specified feature sets. (As recalculated by Steve Gilfus, Director of Product Strategy, Blackboard Inc.)

	Blackboard	WBT Systems	VLE	MadDuck	WebCT, Inc.	Embanet
	CourseInfo	TopClass	VirtualU	WCB v.4	WebCT	IntraLearn

		v.3.1	v.2.4+		v.1.3.1	
Learning Tools (out of 18)	11	8	12	15	12	14
Collaboration Tools (out of 22)	17	6	15	17	11	22
Authoring Tools (out of 14)	11	9	10	11	12	12
Course Management Tools (out of 25)	23	17	21	23	20	20
Administration Tools/Costs (out of 15)	13	8	7	12	10	7
Score	**75**	**48**	**65**	**78**	**65**	**75**
Score as a % of Total (out of 94)	**80%**	**51%**	**69%**	**83%**	**69%**	**80%**

Date: Thu, 28 Oct 1999 18:06:48 -0400
From: Kristi Lozano
Subject: cms study

Hi, I find your study inaccurate in relation to WebCT. We use both WebCT and Web Course in a Box and WebCT is much more powerful than WCB. You need to revisit this study and look at WCT more closely. I find it troubling to find misinformation on your site. Both WebCT and WCB have new versions to compare. Please update your study with WCT 2.0 and WCB 4.0 or take it down. My director said the author was in the WCB vendor booth at Educause so there may be a little bit of bias marketing going on.

Thank you,

Kristi Lozano
Assistant Director, Instructional Technology
Instructional Development Center
Florida International University

Dear Ms. Lozano:

Thanks for voicing your concern. At FutureU, we appreciate and encourage a diversity of opinion.

FutureU is an independent consulting firm and content provider whose e-books and courses run in any Course Management System.

We feel very fortunate that MadDuck technologies was generous enough to host us in their booth at Educause. But as I am about to explain, our relationship with MadDuck had nothing to do with how well they did in our comparison report.

If you will read the "Methodology" section closely, you will find that we sent the features list to each vendor and the answers we include in the report are the ones that the vendor reported. We asked all vendors to report on their most current versions.

The answers included for WebCT came from Phillip Chatterton, Sales & Marketing Coordinator, ULT Canada (WebCT's parent company).

There are two logical ways that you can get your opinions about WebCT heard:

1) Contact WebCT and let them know that you disagree with the answers that their agent supplied to us. Urge them to send a new set of answers. When we receive those new answers, we will update the report to reflect them (after some testing to be sure that they actually work).

2) Join a discussion forum in the FutureU Online Learning Exchange to let your opinions be known to the online educators participating there. We will open the Learning Exchange discussion forums sometime this month and will be happy to send you an invitation when that happens. In the meantime, you can get a sneak peak at the whole virtual community for online educators at http://www.futureu.com/olx.html

Thanks again for your concern. We welcome your ideas on any subject related to online education and we look forward to hearing more from you in the near future. Your interest and attention to detail would be a valuable addition to our Online Learning Exchange. I very much hope you will visit the site often.

From: Kathleen Paul kathleen.paul@webct.com
Date: Thu, 18 Nov 1999 13:38:00 -0400

November 17,1999

Claude Whitmyer, CIO
FutureU.com

Dear Claude -

We recently became aware of your comprehensive report comparing course management systems -- it's a terrific feature by feature comparison - we'd just like to clarify a few points and make some corrections to the data regarding WebCT; the corrections are based

on the current v.1.3.1, but apply also to the new version 2.0, which is being released within the week.

First, you may not be aware that, following the merger of ULT and WebCT, the corporate name became WebCT, so that is one change we'd like to request on your site, if possible.

I will run through the feature discussion in the order they appear in your report -- the cumulative change,in terms of WebCT's score is to place it at 86% of the total possible. We do feel this is a conservative score, given the over 100 feature improvements that are found in v.2.0 -- as is always the case, the limited descriptions of the features make it difficult for such a comparison to truly reflect the differences between the products. We appreciate the fact that your site encourages further discussion and information sharing.

Learning Tools
Student area
Private Directory on course server: Should be "Y". The Student Presentation area can be set up for individuals or groups, and students may use it for individual file storage if they wish.

Batch upload: Should be "Y". Built in zip/unzip utilities allow easy batch uploading with no additional software.
Team Building: The meaning of this term as a feature is unclear, but groups may be set up in several areas of the course environment to allow for various levels of group formation and interaction. The system allows for manual or automated group generation. We would say this is "Y."
Library and Information Access: Should be "Y." WebCT allows for easy interface with existing library access points, as well as with the open web. Additionally, resource catalogs, content catalogues, etc., can all be placed wholly within the site as well, using a Reference tool.
Total for Learning Tools: 16 (leaving out "Team Building" because of ambiguous term)
Collaboration Tools:
List Servs/Newsgroups: should be "N".
Bulletin Board (one to many): Should be "Y". Students and faculty post individual messages that are available to all members of the course.
Whiteboard: Should be "Y".
Archive: Should be "Y". Both students and faculty are able to compile communications and archive elsewhere as text documents. All communications are normally included in any backup archive of the course as well.
Teleconferencing, Video, Audio: WebCT supports the use of 3rd party tools for communication tools. It's unclear whether the comparison was intended to determine which of the CMS products came with these tools built in, and which would support the use of outside tools. We would say these would be "Y".
File Sharing: Should be "Y". Students are able to share files when working in a group within the Student Presentation area.

Email Attachments: Should be "Y".
Message Attachments: Should be "Y".

File Storage: Within Student Presentation area.

Private Directory on course server: unclear as to meaning. Every course has its own discrete site, with a wholly functional file management system unique to the course.

Total for Collaboration Tools: 15 (leaving out Teleconferencing,audio, video, file storage, and private directory, because of unclear definitions).

Authoring Tools:

Automated course TOC/index: Should be "Y". This feature is further enhanced with the dynamic site map included in v.2.0.

Batch upload: Should be "Y". Built in zip utilities allow easy upload of course files.

Total for Authoring Tools: 12

Course Management Tools:

Announcements & Bulletins: Should be "Y". Instructors have had many ways to make a announcements; with v.2.0, announcements and bulletins can be sent from either the instructor or the administrator level.

Batch upload: Should be "Y".

Participation: Should be "Y". The system reports how many messages each student has accessed on the Bulletin Board, as well as how many postings made.

Assignment reminders: The Calendar allows assignment information to be posted in an "at a glance" format.

Quizzes: Timed: Should be "Y". WebCT's quiz tool has always had the option of setting up timed quizzes.

Course Archive/Backup: Should be "Y". Courses can be backed up and archived by the instructor or the administrator. Built in utilities make this possible in a matter of minutes.

Course Replication: Should be "Y". Any course on a WebCT server can be a template for a new course. There is the possibility for infinitely replicating any WebCT course.

Total for Course Management: 23

Administration Tools:

Automated Registration: Should be "Y". WebCT currently allows for easy importing and exporting of student data. With v.2.0, an open API makes this process even more transparent; additionally, WebCT has partnerships with SCT/Banner, and PeopleSoft, for development of specialized APIs for their products.

Student Transcript: Should be "Y". Students instructors and administrators are able to access and download course records. The information can be printed or imported into another database.

Standard: Open and Proprietary.

Hosting Services: Should be "Y".

Demo course: "Y, free".

Platform: Windows NT: Should be "Y".

Total Administrative Tools: 15

The annualized license fee is described in detail at our website. Most importantly, the maximum cost is $3,000 for unlimited number of students. Please reflect this change in the table.

With recalculation, WebCT's total is 81 and the total percentage of attained features is 86%. These totals do not include credit for any features where the definition was in question, as identified in the notes above.

Thank you for your time with this, Claude -- hope this clarifies some of the questionable areas.

Do let me know if there's additional information I can provide -

Regards,

Kathleen Paul, Champion
WebCT
Peabody, MA 01960

Kathleen, Thanks for your clarification letter. We will integrate your answers into the report when we next update it, which should be within a week to 10 days.

claude

P.S. FYI: As you may have noticed from the Methodology section, we submitted a table of features to all vendors and used the vendor answers to create our comparison. You may want to contact Phillip Chatterton, Sales & Marketing Coordinator, ULT Canada, and inform him of the differences you have reported to us so that other researchers will receive a uniform answer from within WebCT in the future. (Our email was routed to him from "support@webct.com" in case you want to also alert them about who should have actually rec'd our request).

Date: 12/14/99
Name : Suzanne Alexander
E-mail : suzanne@cnu.edu
Subject1: Other
Subject2: CMS Comparison Report

Message : Your comparison report was extremely unprofessional. You made statements concerning features that WebCT does or does not have which were incorrect. WebCT does have a Bulletin Board, student registration upload, e-mail attachments, and student participation records. You failed to mention that WebCT does automatic grading with a built in grade book. You also made the statement that "students prefer" a particular type of mail structure without any explanation on how you determined this. This was a very irresponsible survey that was published. I can only pick out the erros that were made wih the package that I am presently using, but I imagine that you have made many mistakes in the other packages that you did not want to use.

Dear Ms. Alexander:

Thanks for voicing your concern. At FutureU, we appreciate and encourage a diversity of opinion.

FutureU is an independent consulting firm and content provider whose e-books and courses run in any Course Management System.

If you will read the "Methodology" section closely, you will find that we sent the features list to each vendor and the answers we include in the report are the ones that the vendor reported. We asked all vendors to report on their most current versions.

The answers included for WebCT came originally from Phillip Chatterton, Sales & Marketing Coordinator, ULT Canada (WebCT's parent company). According to officials at WebCT these answers were grossly inaccurate.

A second set of answers was sent to us in mid November by Kathleen Paul in WebCTs Boston office.

There are two logical ways that you can get your opinions about WebCT heard:

1) Contact WebCT and let them know that you disagree with the answers that their agents supplied to us. Urge them to send a new set of answers. When we receive those new answers, we will update the report to reflect them.

2) Join a discussion forum in the FutureU Online Learning Exchange to let your opinions be known to the online educators participating there. We will open the Learning Exchange discussion forums sometime in January and will be happy to send you an invitation when that happens. In the meantime, you can get a sneak peak at the whole virtual community for online educators at http://www.futureu.com/olx.html

Thanks again for your concern. We welcome your ideas on any subject related to online education and we look forward to hearing more from you in the near future. Your interest and attention to detail would be a valuable addition to our Online Learning Exchange. I very much hope you will visit the site often.

claude

Date: Wed, 15 Dec 1999 12:29:57 -0800
To: claude@futureu.com
From: "Murray W. Goldberg"
Subject: Errors in Comparative Report of Course Management Systems

Dear Sir/Madam. I am Murray Goldberg, founder of WebCT and president of WebCT Canada. I read with great interest the comparative evaluation you have posted at http://www.futureu.com/cmscomp/

These evaluations can be very useful and as such are relied upon by people entertaining the idea of adopting such technologies. Unfortunately, the information in your review of WebCT is horribly and grossly inaccurate. I am not referring to a few items where judgment calls may lead the presenter to one conclusion or another. I am referring to a very large number of clear and significant errors. I question whether it was actually WebCT being reviewed. One of many clear examples of error is whether WebCT has a bulletin board - the comparison says no - but WebCT was *built* on its ability to communicate and no user of WebCT could possibly ever report that it had none. Kathleen covered most (though not all) of the largest errors in the report, so I will refrain from restating them here.

Could I please ask that you:

1) let me know which employee of WebCT provided you with these incorrect answers
2) either update the site immediately with correct information, or if that is not possible, remove WebCT from the listings. No information is better than grossly inaccurate information.

In order to obtain correct information, please feel free to call either of the following people:

Myself - Murray Goldberg. I will be available this week in either the Vancouver or Boston office.

Sasan Salari - VP WebCT Canada - reachable at the same numbers as above

Alternatively, we could provide a written response if you preferred that. This would be my preference. Let me know - either way I would very much like to see you with correct information immediately. In the interim, Kathleen's response is accurate and can be used. Only small errors would remain at that point.

Let me apologize if the tone of this letter is abrupt, I was simply shocked that you could have been provided with such inaccurate information. I look forward to hearing back from you and helping to rectify the errors in the report.

Best regards - Murray

12/15/1999

Dear Dr. Goldberg:

I just tried calling your Vancouver office and they informed me that you were on your way to Boston. So I'll give you a call there tomorrow.

I want to immediately reassure you, however, that we will do all we can to make sure that the facts about Web CT are accurate.

If you read the methodology section of our report, you know that we sent the features list to each vendor and the answers we included in the report are the ones that the vendor reported. We asked all vendors to report on their most current versions.

The answers included for WebCT came originally from Phillip Chatterton, Sales & Marketing Coordinator, ULT Canada.

A second set of answers was sent to us in mid November by Kathleen Paul in WebCT's Boston office. These were added right away to the table page located at: http://www.futureu.com/cmscomp/cmstables.html#corrections.

We hope to integrate these answers into the text and tables themselves before the end of the year, so it would be greatly helpful if you could provide your next set of written corrections as soon as possible.

Since your email arrived an hour ago, I have also added a pointer in the Revisions table on the main report page so that it is more obvious how to find Kathleen's data. Please also note that extensive corrections were provided by one of your users, Professor Joseph Delaney at the Teaching Excellence Center of Rutgers University, back in mid-October and these were also added to the corrections as soon as we received them. Also, Blackboard submitted a second set of answers in October which we have already integrated into the narrative and tables.

I present this information as evidence of our good intentions. From the beginning, we designed the report to be as fair to all vendors as possible. We are most interested in an honest and open exchange between users and service and product providers. Our hope is to stimulate excellence in all the products available.

FutureU is an independent consulting firm and content provider whose e-books and courses run in any Course Management System. In January we intend to open a virtual community about teaching and learning online entitled the "Online Learning Exchange" with discussion forums and resource pages specifically focused on the needs of administrators and instructors specializing in online learning. We are sending invitations to all major CMS vendors to invite their own customers to visit the Learning Exchange so that actual users can speak for the software they have chosen. We expect this to be quite useful to both vendors and customers, by providing detailed feedback about the pros and cons of each CMS product.

You can get a sneak peak at this virtual community for online educators at http://www.futureu.com/olx.html

I look forward to speaking with you more about all of this tomorrow when I call.

All the best,

claude

12/16/1999
Dear Dr. Goldberg:

I called again today and will await your return call and/or email with written corrections.

I look forward to receiving your new feature set description and will hold off editing the comparison report any further until I have heard from you.

Sincerely,

claude

12/27/99
Dear Dr. Goldberg:

I will be rewriting the CMS comparison report in the next few days. If you are able to provide me with your latest feature set information, I would be happy to include it. Otherwise, I will use the information sent to me by Kathleen. I will need what you want to provide no later than this Thursday (12/30) as I intend to finish this project over the New Year weekend.

By the way, the California Virtual Campus has asked us to make a presentation this spring on how to choose course management software. We have gotten them to agree to invite representatives from WebCT, Blackboard, Web Course in a Box, TopClass, and Intralearn to make mini-presentations to our audience. Were not sure of the format or time allotted for each vendor, but you should receive an invitation very soon with the details.

I will look forward to meeting your representative or you, if you happen to attend.

Sincerely,

claude

At 03:05 PM 12/29/1999 -0800, you wrote:
Dear Claude,

Murray Goldberg is out of the office, so I am responding in his stead. I re-read Kathleen's comments, and they are accurate descriptions of WebCT's features. I thank you for making the changes in your report and look forward to the update.

Best regards and a Happy New Year,

Sasan

12/30/99

Dear Mr./Ms. Salari (I apologize for not recognizing the gender of your name, but my language abilities are limited mostly to English, I'm sorry to say):

Dr. Goldberg seemed clear in his original email that he wanted to expand beyond Kathleen's answers. But he also said you were the person to talk to about this if he was not available. So, based on your reply, I am going to go ahead with Kathleen's comments.

The only drawback to this is that if Dr. Goldberg wants additional changes they will have to wait until the next revision of the report, which will probably be the annual update scheduled for next fall. He might try emailing me his comments over the weekend, but I can't guarantee I'll see them if they come in after Thursday.

Sincerely,

claude

Date: Thu, 30 Dec 1999 11:54:10 -0800
From: Sasan Salari
Organization: WebCT, Inc.
To: Claude Whitmyer
CC: "Grimes, Gail Terry"
Subject: Re: [Fwd: Request for Changes]

Dear Claude,

it's Mr :) (but you can just call me Sasan - no need for formality).

I would be grateful if you could use Kathleen's comments as a basis for the update. I have made a couple of additions/modifications to Kathleen's answers below, so my comments are in addition (not a substitution) to Kathleen's feedback.

Version: we just released version 2.0, so that would be the best one to use in this comparison.

Collaboration Tools:

List Servs/Newsgroups: while WebCT does not itself provide a listserv or newsgroup servers, but instructors can easily link to existing ones from their course web-pages.

Public File Library: the student presentation area can be used as a way for students to distribute files either publicly to their classmates or privately to their own group members, so I would classify this as a "Y".

Batch Delete: should be a "Y" as students can delete more than 1 file at a time.

Authoring Tools:

Batch Delete: should be a "Y" as instructors can delete more than 1 file at a time.

Pricing:

The price range for a WebCT server annually is $100 to $3000, depending on the total number of student seats,where $3000 provides an institution with an unlimited license. In your pricing example for 100 students annually, the cost would come out to $500 per year.

Have a great weekend and thanks for all your efforts,

Sasan