COURSE CREATION SOFTWARE: BOX OR BUILDING BLOCKS FOR INSTRUCTION

Mary F. O'Sullivan, Ph.D.
Western Wisconsin Technical College
304 Sixth Street North
La Crosse, WI 54601
o'sullivanm@email.western.tec.wi.us

The nature of computing on college campuses has changed dramatically in the last ten years. Not only have the numbers of machines increased and the number of students and faculty using these machines increased, but the uses to which computers are put have changed radically. For the last nine years Kenneth Green has conducted a national survey of desktop computing and information technology in American higher education institutions. His surveys chronicle the evolution of computer usage and issues of computer usage in education. Green marks 1995 as the year that technology moved out of the realm of "early adopters" into the mainstream of faculty. In 1996, based on data from 660 two-year and four-year colleges and universities across the United States, Green found a significant number of respondents identified "assisting faculty to integrate technology into instruction" and "providing adequate user support" as two key issues (Green, 1996). 1997 saw an increase in the usage of e-mail and the internet for instruction, but in 1998, Green says that the most significant element in the survey found that: "… across all sectors of the higher education landscape, institutions continue to struggle with key aspects of IT planning and infrastructure: developing a strategic and a financial plan for IT, planning curriculum integration, and providing adequate user support" (1998).

As colleges continue to grapple with ways to support, finance, and integrate technology into instruction, they are also responding to pressure brought to bear by the increasingly common use of computer technology. According to Dataquest Inc., a unit of Gartner Group Inc., lower-priced personal computers have had a strong impact on U.S. consumers, so that in 1998 50 percent of U.S. households had a PC. This is especially significant as just 27 percent of U.S. households had a PC in 1995 and 36 percent had a PC in 1996 (Gartner). These figures show that homes with a PC nearly doubled in two years. Certainly these computers are used for games and personal e-mail, but an increasing number of people also see them as vehicles for taking online courses. As the number of households with a PC continues to rise, demand for on-line classes will grow based on that proliferation.

Online instruction was a new concept in 1988 at the New Jersey Institute of Technology (NJIT) when Hiltz and her colleagues created what they called a "Virtual Campus." At that time there were no packaged course creation products available which focused on communication among participants (students and teachers alike) and which was remotely accessible (Turroff). Things have changed. My interest in and work toward evaluating the course-in-a-box (CAB) software and my efforts to evaluate it began in the fall of 1996. At that time, only a handful of such programs were available and there were no extensive reviews of that software. As is the rule on the WWW, the status of CAB software availability has changed dramatically in the past three years, as has the availability of evaluative reviews of that software. Even the Chronicle of Higher Education (McCollum) reviewed some of what it termed the "dozen or so leading software packages." In fact, there are around three dozen programs available to assist in creating websites for teaching and learning, not including those programs designed to help ease writing HTML, such as Homesite from Allaire or Dreamweaver from Macromedia. (See table 1 for an alphabetical listing of websites for most of the software discussed in this paper.).

There are three choices for creating instructional websites: Computer-based Training software, CAB, and HTML editors for a do-it-yourself approach.

Computer-based Training

Some of this courseware was developed to produce independent tutorials made available on CD. Much of the software in the independent tutorial category grew from Computer-based Training (CBT) software designed for CDs and company networks. When that CBT was repositioned to become Web-based, it brought with it the old emphasis on question and answer lessons designed to be used with little or no interaction with an instructor. For example Authorware from Macromedia and ToolBookII from Asymetrix both have extensive content creation tools with slick graphics and animation, but both also require extensive programming skills and do not have built-in messaging capabilities. These are essentially authoring tools that create multimedia training that can be run on the WWW, from a CD, or from a combination of the two.

In addition, some software that began as CBT, but migrated to the WWW, has begun to incorporate web tools. For example, LearningSpace from IBM/Lotus shows its origins in CBT, because its emphasis is on chunking material for delivery, rather than on interaction and communication. The most recent version does, however, offer components for communicating between students and faculty, including discussion forums and a utility that allows students to make public or private notes concerning materials. The latter offers possibilities for student discussion of assigned readings. This newest version is easier to use, but is still weak in instructor support and still lends itself best to a correspondence course style of delivery (Kramer).

CBT works well for corporate use, but generally colleges interested in producing online instruction have differing needs and place more emphasis on interaction among students and instructors. For example, in July 1997, the Wisconsin Technical College System (WTCS) in conjunction with *PC Week* sponsored a three day event to which vendors representing course-creation software were invited (Bethoney). The software representatives were given the same course material and told to create classes, which were then presented to 18 judges selected from both the education and corporate worlds. It is interesting to note that the courses were created not by a typical college instructor, but by the sales staff who are, presumably, well versed in the use of their software, so that the emphasis of evaluation for the test was on the end product, not on the process or ease of use of the software. Seven of the eight course-creation programs were rated very closely, partly because the corporate judges were interested in different capabilities than were those from education. As one judge from a life insurance company explained: "We have some different objectives in our training, so requirements have to be different" (Crowley 26)

Course in a Box

There are multiple kinds of CAB which serve different purposes. For example, an educational institution that is attempting to create a virtual college parallel to a physical college might need the resources provided by a company like the Real Education Active Learning system (REAL). REAL sets up a total on-line campus with course catalogue, academic calendar, degree information, student inquiry form, application form, and course registration as well as individual virtual classrooms for courses. The resulting site resides on the Real Education server. The product is impressive; it uses streaming audio and video, synchronous chat, asynchronous threaded discussion, and internal e-mail. In this instance, the college or university abdicates some control, and certainly pays for the services rendered. On the other hand, if an educational institution is only attempting to foster college-wide faculty on-line ventures, it might find the ease of course creation and course management features of TopClass or WebCT to more nearly meet

its needs. Finally, college technical personnel might create in-house CAB. Some, like the University of North Carolina (Share Carolina: http://www.unc.edu/courses/ssp/share/) and the University of Washington (Web Worksheet: http://weber.u.washington.edu/~lspace/), also offer their software for free download.

In addition, individual faculty goals also affect how CAB is evaluated. As is true with all instructional strategies, both those employed in a traditional classroom and those used in an online classroom, the design for instruction must emerge from specific learning goals and objectives (Pitt and Clark). In their article, "Good Teaching is Good Teaching," Chickering and Ehrmann (1997) argue that new communication and information technologies must be employed in ways that are consistent with the seven principles of good instruction that they devised in 1987. It isn't computer technology that does or does not make good teaching, it is the way that technology is used. With CAB, a primary concern is the level of interaction that is designed into the site. There are two kinds of interactivity, both of which are important. Students need to interact with the material they are learning. Students also need to interact in a community of learners made up of others in their class and their instructor. The power of the WWW is communication and any CAB that does not exploit the communication possibilities is severely handicapping the educational endeavor.

Sechrest and Shave describe a four level hierarchy for instructional sites, based primarily on the emphasis on interaction and communication: informational, supplemental, dependent, and fully on-line. The informational course website provides essentially the same information an instructor would provide on the first day of a course, including a syllabus, statement of goals, list of required books, and so on. This is a fine first step, but often is not, of course, an integral part of a course. The second step is the supplemental website. In addition to syllabi and so on, a supplemental website contains other course materials. Sites at the first two levels are usually created by those who have little experience with discussion lists, synchronous conferences, or other more interactive WWW elements. The material on the site is useful, but not actually required for successful completion of the course. The third level is the dependent website, one that requires the students to use the materials on-line if they are to successfully complete the course. Finally, the fully on-line course website is an on-line class, containing everything needed for completing the course. Often the development of a site is a progression from creating a web page with a syllabus, reading materials, and assignments; to adding conferencing and discussion groups; to linking these conferences to webpage assignments, adding testing and course management tools, and providing for evaluation (Bourne et. al.).

Of those CAB currently available that support website creation at all four levels (informational, supplemental, dependent, and fully on-line), I have chosen four to discuss as examples: TopClass, created by Dublin University and marketed by WBT Systems, WebCT developed by the University of British Columbia, Virginia Commonwealth University's Web Course in a Box, and SyllaBase, developed by the 3GB Group at Utah State University. (For additional comparisons of CAB, see table 2.)

All four of the example CABs create sites which are accessible with any web browser and are available for UNIX and Windows NT servers. They all offer conferencing and e-mail capabilities, and all require only an HTTP server, no proprietary server software such as LearningSpace does. TopClass places emphasis on communication, offering options for student to student and student to instructor communication. It also provides extensive on-line registration and enrollment management tools. It supports frames and provides a number of testing options, including timed testing. Academic pricing is based on number of users and is per annum; or the program can be acquired by outright purchase or by subscription. Purchasing this software to be used with 200 students costs nearly $5000. WebCT has nearly all the functionality that TopClass possesses, except for the registration component. It too is licensed per number of users and over specific amounts of time from four months to a year. The license price for WebCT to be run on one server for a year, and used by 200 people is $750; although, WebCT is free to download. The

cost does not begin until a class is actually made available to students. Web Course in a Box (WCB) was one of the very first integrated course-creation packages. In fact its name has become nearly a generic term to describe all integrated course-creation software. WCB began as a free to download available in Unix, Windows NT, and Mac versions. It creates a course with conferences, course calendar, assignments, and tests, but offers fewer student and course management functions than either TopClass or WebCT. WCB is now being maintained by MadDuck Technologies; an on-line slide presentation on WCB is available from an EDUCOM presentation, at http://www.vcu.edu/idc/gj/educom97/start.html. Finally, a relatively recent addition is SyllaBase, that makes use of Active Server Pages and offers many customization options. It runs on NT and early in 1999, an installable version will be offered free to educational institutions.

Not only do the example CABs discussed here support all four levels of instructional websites, but so do most of those that I have not discussed directly. They also have in common a rather dreary sameness in the design options available. TopClass can be customized to enable courses to match other webpages of the college or the instructor, but this feature is a rarity among CAB. WebCT is not as slick looking as TopClass, nor does it offer the customization options that TopClass does. WCB is even less slick than WebCT and allows for less customization. SyllaBase allows for easy importing of graphics and backgrounds, and so, offers the most potential for allowing an individual look and feel to the pages it creates. Beyond the visual appeal, however, are other important design issues. All of the example CABs create a front page, the main menu page of the site that includes essentially the same choices: class information, announcements, class schedule, student e-mail pages, assignments, a discussion forum and student utilities. This front page is certainly utilitarian, but the software allows for only that way to arrange information on a CAB website. In other words, an individual instructor cannot emphasize course components by placing them on the front page, unless the CAB happens to agree with the instructor on an item's importance.

Do-It-Yourself Website

Creating websites with an HTML editor has many benefits over using either CBT or CAB. First, each instructional website can be as individual as the instructor desires. There is no need to try to fit a particular pedagogical intent to the requirements of the software used to create the site, nor are the graphic elements limited by choices offered by the software. So, not only does the instructor have complete control of the site design, but also of the site itself. There is as much control over the website as an instructor would have with her/his printed handouts or assignments in a traditional classroom. It is true that using an HTML editor is more difficult than using CAB, and does take longer. It is also true that creating audio or video elements is more difficult than with CAB and requires additional software. However, learning to use a particular CAB also takes time and incorporating audio and video still adds to the learning curve.

Software costs vary greatly among individual packages needed to create a custom site as does the cost of CAB. As discussed above, CAB can range in price from thousands of dollars for packages such as TopClass or WebCT, to free for SyllaBase. Although if the development of SyllaBase follows the path of Web Course in a Box and WebCT, there will eventually be a charge for its use as well. For the most part, choosing software off the shelf to create pages, graphics, and audio/video files is less expensive. In fact, SiteAid for example, is sufficiently sophisticated to be used to create a totally online course, and it is free.

I think the most significant difference between CAB and do-it-yourself site creation is that CAB creates dependence on a particular platform and vendor. If one happens to pick the CAB equivalent of Microsoft Office Suite over the CAB equivalent WordStar for example, being tied to a particular vendor and platform might not result in problems of compatibility, continued

development, and support of the product. If one is unlucky, however, and chose the CAB equivalent WordStar, the result could be expensive in terms of both money and labor necessary to switch to the winner in the software wars.

Conclusion

The answer to the question of whether or not CABs are the building blocks for an instructional website or a box that confines a website is dependent upon a number of factors discussed in this paper. Perhaps the two most important considerations are:
1. How much technical support is available to faculty?
2. What is the intent for the software? In other words, is there a need for the software to administer large numbers of individuals or groups, to support student registration and management of tests and grades? Or, is the intent to support some faculty with their online endeavors?

Lack of technical support for faculty almost mandates the use of CAB as does the need for an administrative component.

There is no question that at this time, a skilled website designer could produce a website more specifically tailored to an individual's instructional needs and pedagogical intent. On the other hand, most faculty are not that skilled with the elements of website design and most colleges do not have the technical staff to support large number of faculty in online teaching endeavors. In addition to teaching a number of writing courses in a traditional classroom as well as on-line, I am also the manager of my college's Virtual On-line Instruction Center (VOICe). In that capacity, I work with faculty to help them create web site for their courses. I find that working with raw HTML can be an insurmountable hurdle for some faculty. I am, therefore, searching for CAB software to install on the VOICe site, so that faculty can receive help with their first steps toward creating an on-line presence for their classes. I am currently exploring the possibility of installing SyllaBase on our instructional server. On the other hand, I will also be encouraging faculty to take the next step by offering tutorials on course design.

CAB can be both box and building blocks. Using CAB exclusively does mean accepting the particular software's restraints, the walls of its box. The box may be big enough to allow quite a bit of movement, but it is still a box. CAB can also be used as a way for faculty to learn to think about how the online environment changes not the content of a course, but can change some of the techniques for delivery of that course. In this way, it could become the building blocks that led faculty to take more control over their own websites.

Course Creation Software

Allen Communications' Managers Edge: http://www.tracom-phx.com/allen.html
Asymetrix Librarian: http://www.asymetrix.com
Asymetrix ToolBook II: http://www.asymetrix.com
Blackboard CourseInfo: http://product.blackboard.net/courseinfo
CBT Systems: http://www.cbtsys.com
Convene: http://www.convene.com
CyberProf: http://www.howhy.com/home
DiscoverWare: http://msstraining.com
Docent: http://www.docent.com
Eventware: http://eventware.com
      Example: http://topclass1.itec.suny.edu/west
      Example: http://www.unc.edu/cit/resources/webct.html
Internet Classroom Assistant: http://129.105.114.26/nicenet/ica/ica_info.cfm
IntraLearn: http://www.intralearn.com
ITC's AdminSTAR http://www.itclearning.com/home.html
LOIS - KnowledgeSoft: http://www.knowledgesoft.com
Lotus LearningSpace: http://www.lotus.com/home.nsf/welcome/learnspace
Macromedia Authorware http://www.macromedia.com
MicroMedium's Digital Trainer Professional: http://www.micromedium.com
National Education Training Group (NETg): http://www.netg.co.uk
Oracle OLA: http://www2.oracle.be
Pathlore's Phoenix http://www.pathlore.com
Plateau Systems: http://www.plateausystems.com
Questwriter: http://iq.orst.edu/meta
Real Education Active Learning System: http://realeducation.com
Saba Software - Education Management System: http://www.sabasoftware.com
Saratoga Group - CyberWise Online: http://www.cyberwise.com
SiteAid: http://www.siteaid.com
Solstra Administrator: http://www.fontwell.co.uk/SolstraWeb/index.html
STG VLearn: http://www.vlearn.com
SyllaBase: http://english.usu.edu/3gb
Syscom - Training Server: http://www.syscom-inc.com
TopClass (WBT Systems): http://www.west.ie/index.html
Training Server: http://www.trainingserver.com
Virtual-U: http://virtual-u.cs.sfu.ca/vuweb/VUenglish
Web Course in a Box: http://www.madduck.com/wcbinfo/wcb.html
Web Mentor: http://avilar.adasoft.com/avilar/index.html
WebCT University of British Columbia: http://homebrew1.cs.ubc.ca/webct/webct.html

Table 1

Course-creation Software Comparison Sites

Web Site	URL	Contents
The NODE: Technologies for Learning	http://node.on.ca/tfl/integrated/	Links to software sites, technical specifications, reviews, user stories for 24 course-creation packages
PC Week: ZDNET	http://www8.zdnet.com/pcweek/reviews/0818/18chart.html	Chart comparing software evaluated in WTCS test
Dr. Bruce Landon's Site	http://www.ctt.bc.ca/landonline/	Comparison of software features and a discussion list on the topic
Web-Based Training Information Center	http://www.filename.com/wbt/pages/wbttools.htm	Lists tools for web course presentation
University of Manitoba	http://www.umanitoba.ca/ip/tools/courseware/evalmain.html	Chart comparing features of LearningSpace, TopClass, WebCT, and ToolBook
Walden University	http://www.waldenu.edu/info-tech/instruction/tools/search/evalform.html	Checklist for evaluating groupware/conferencing software
University of Pittsburgh: Committee on Conferencing Software	http://www.pitt.edu/~washburn/compare.html	Chart comparing features of 6 packages with a link to the final report in PDF
Tools for Developing Web-based Training	http://kell167.ed.psu.edu/trdev-l/summary/wbt-tool.txt	This is the appendix from an upcoming book from Jossey-Bass, by Margaret Driscoll.

Table 2

REFERENCES

Bethony, Herb. "Computer-based Training on the Web." *PC Week*. 18 August 1997: 1+. Also available at: http://www8.zdnet.com/pcweek/reviews/ibt.html

Bourne, John, Eric McMaster, Jennifer Rieger, and J. Olin Campbell. "Paradigms for On-line Learning: A Case Study in the Design and Implementation of an Asynchronous Learning Networks (ALN) Course." *Organization for Asynchronous Learning Networks Journal*. 1998 Available at: http://www.alm.org/alnweb/journal/issue2/assee.html

Chickering, Arthur W. and Stephen C. Ehrmann. "Implementing the Seven Principles: Technology as Lever." American Association for Higher Education Site. August 28, 1997. Available at: http://www.aahe.or/technology/ehrmann.htm

Crowley, Aileen. "Learning Any Time, Any Place: Wisconsin Technical College System Champions Statewide Internet-based Training. *PC Week*. 18 August 1997:26. Also available at: http://www8.zdnet.com/pcweek/reviews/ibt.html

Green, Kenneth. "The 1996 National Survey of Information Technology in Higher Education." *The Campus Computing Project.* November 1996. Available at: http://www.campuscomputing.net

Green, Kenneth. "The 1995 National Survey of Information Technology in Higher Education." *The Campus Computing Project.* November 1995. Available at: http://www.campuscomputing.net

Green, Kenneth. "The 1997 National Survey of Information Technology in Higher Education." *The Campus Computing Project.* November 1997. Available at: http://www.campuscomputing.net

Green, Kenneth. "The 1998 National Survey of Information Technology in Higher Education." *The Campus Computing Project.* November 1998. Available at: http://www.campuscomputing.net

" Gartner Group's Dataquest Says 50 Percent of U.S. Households Have a Personal Computer." February 9, 1999. Available at: http://gartner3.gartnerweb.com/dq/static/about/press/pr-b9906.html

Hiltz, Starr Roxanne. *The Virtual Classroom: Learning Without Limits Via Computer Networks*. Norwood, NJ: Ablex, 1995.

Kramer, Matt. "Learning Space Earns Mixed Grades." *PC Week*. 30 March 1998: 54.

McCollum, Kelly. "Colleges Sort Through Vast Store of Tools for Designing Web Courses. *The Chronicle of Higher Education: Information Technology*. 21 October 1997. Available at: http://chronicle.com

Pitt, Tina Joy, and Anne Clark "Creating Powerful Online Courses Using Multiple Instructional Strategies." *Teaching in a Community College On-Line Conference Site*. April 1997 Available at: http://leahi.kcc.hawaii.edu/org/tcc_conf97/pres/pitt.html

Sechrest, John. (1998, April). "Interquest and Questwriter, Experience in Online Classes. *Teaching in a Community College On-Line Conference Site*. April 1998. Available at: http://leahi.kcc.hawaii.edu/org/tcon98/paper/sechrest.html

Shave, Chuck. "So You Want to Deliver a Course Using the Internet!" *Teaching in a Community College On-line Conference Site.* April 1998. Available at: http://leahi.kcc.hawaii.edu/org/tcon98/paper/shave.html

Turoff, Murray. *Designing a Virtual Classroom.* 1995 International Conference on Computer Assisted Instruction ICCAI'95 at National Chiao Tung University, Hsinchu, Taiwan. March 7-10, 1995. Available at: http://wwwnjit.edu/Department/CCCC/VC/Papers/Design.html