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Article abstract

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April – 2004

Technical Evaluation Report

29. Integrated Learning Management Systems

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Abstract

Four integrated learning management packages were reviewed: *CentraOne*, *IntraLearn*, *Lyceum*, and *Silicon Chalk*. These products provide different combinations of synchronous and asynchronous tools. The current report examines the products in relation to their specific value for distance educators and students.

Introduction

Report #5 in this series has indicated that the ideal learning management systems favour a learner-centred approach, and contain the following features: a range of content tools for synchronous as well as asynchronous collaboration, and student management tools. Four integrated software packages were evaluated according to the selection criteria of cost (institutional and user), complexity (user focus), control, clarity, common technical framework, and features (see [Report #7](#) in the series).

Product Trials

CentraOne (v5.2)

This collaborative platform contains three components: the Agenda Builder, including content creation; the Symposium, or virtual classroom; and the Conference, a virtual meeting-place. The current evaluation concentrates on the DE potential of the first two of these features. Up to 500 participants can interact simultaneously via the platform. The Agenda may contain files, file directories, URLs, and *CentraOne* tools such as Whiteboard, Web Safari, and AppShare. A presentation created with the Agenda Builder can include a combination of *PowerPoint* slides, websites, videos, polling and other evaluation tools, and feedback. The content developer creates the presentation and imports it to the platform as a .saz file. The Symposium rooms provide a whiteboard, pointers and other tools for the session leader, and markup tools permitting various types of interaction. The instructor has the ability to enable/ disable tools as needed.

Installation of the *CentraOne* software is a simple process of downloading browser plug-ins, and the interface is uncluttered and user-friendly. Students access personalized home pages and enter

the virtual classroom via an ID and password, with the option of perusing the content before the session. Public and private chat tools are available. Students can ask the instructor direct questions, and can click on icons simulating aspects of a traditional classroom (e.g., 'yes' and 'no' responses, a raised hand, 'laughter,' and 'applause'). The instructor receives feedback via a class list, indicating the person speaking, each participant's responses, and group pacing. Participants can view and broadcast live video, with recording and immediate playback options. They can move around the recorded material at will, completing evaluation surveys, etc. Survey results are recorded in the *CentraOne* database. Technical support for the product is via voice, online help, and easy-to-understand manuals.

In the current evaluation, slight delays were noted as slides loaded for participants to view. One evaluator experienced occasional breaks in audio transmission requiring an exit from and return to the session. *CentraOne* operates on all current *Windows* platforms, permitting sharing of *Windows* applications by the leader and participants. The product makes few demands on users' hardware (requirements are *Pentium* with 133 MHz speed and 64 MB RAM, or higher), though it does not currently accommodate the *Macintosh* platform. The application and add-on modules can be licensed separately, or as a complete collaboration environment hosted on an institutional server or on that of the vendor. Pricing models are based on configuration and volume discounts. Hosted on an institution's site, the one-time cost of all real-time components (up to 50 participants) currently starts at approximately CDN \$50,000.

IntraLearn

IntraLearn is a package of collaborative tools designed for a wide range of users: higher education, K-12 schools, associations, franchise systems, corporations, health care, defense, government, insurance, financial services, telecommunications, and other learning service providers. It provides asynchronous communication by internal email and discussion boards, and synchronous interaction by text-based chat and a simple whiteboard. An optional audio-conferencing component is available in the product's high-bandwidth version. Video-conferencing is not provided, but an external video technology can be integrated into the software via add-ons and plug-ins. The interface has a consistent, intuitive and attractive design, and navigation is straightforward. The password-protected course materials can be created outside the *IntraLearn* platform and uploaded to the server; or an inline editor can be used for direct content creation. The instructor can control course features (e.g., whether exams and whiteboard are turned on, course modules available for the students to view). Screen size, layout, resolution, and audio quality of each course module, can be personalized according to user needs. Banners and pop-up advertisements are not standard features, though users may insert them (e.g., to keep students abreast of important course news). Courses can be linked to other online sources (e.g., electronic textbooks). Search and URL reference features are provided. Attachments can be inserted into the email, chat, and discussion features, and grades displayed in the grade-book. Tests can be incorporated into course modules using self-scored items (e.g., multiple choice, true-and-false, etc.). The administrator can track students' activity in the course via user-friendly tools for registration and report generation.

IntraLearn is *Windows* NT server-based, for use with the *Internet Information Server*, *Cold Fusion Web Server* and *Microsoft SQL*, and with *Internet Explorer*. It runs on a TCP/ IP connection. No download/ installation process is required. The platform can be hosted by a certified *IntraLearn* service provider, or licensed for an internal Intranet behind a firewall. Customers may choose a low- or high-bandwidth version. Hosted courses cost approximately

\$100 CDN per student, and have technical support. Server purchase includes a negotiated initial fee (approx. \$20,000 CDN) and optional annual support (approx. \$10,000 CDN) providing access to upgrade versions. If the server is purchased, the customer can sell a negotiated number of its portals to other institutions in order to generate revenue.

Lyceum

Lyceum is the synchronous, collaborative tool developed and used by the British Open University (OU) to enhance its distance-education programs. It comprises a set of text-chat and other workspace tools with audio-conferencing. A free copy of the client software is available via a 30-mb download, or from the OU on a CD. The administrator assigns password-protected access to a subset of work areas, containing a selection of audio and other features for particular work groups. No asynchronous communication tools are provided. Meetings can be public or private. Navigation through the work areas is seamless and intuitive, using a graphical interface resembling rooms in a multi-level building. The interface is attractive and well organized, and the layout of controls for the various functions is user-friendly and consistent from room to room. The display sizes are fully adjustable. If window dimensions are too small, however, the icons controlling the various functions tend to overlap, becoming cluttered, or disappearing altogether. Text and graphics are consistently sharp, though some degradation of quality can occur when images are imported. Import options are currently restricted to digital image and webpage formats. The user can paste an image onto the whiteboard, or can create new images on it via multi-coloured text and drawing tools. Data can be exported in selected proprietary formats. The document window is a simple word processor with collaborative editing capabilities. The 'concept mapper' allows shared contributions to be organized within text-box nodes positioned and linked on a grid to highlight relationships between them. The interface enables collaborative Web browsing. The contents of any of the visual workspace tools can be saved for reloading and reviewing. In the offline mode, users can prepare materials in advance, saving them for later uploading. In most rooms, multiple occurrences of whiteboards, documents, concept maps, and browsers can be created, though window contents cannot currently be printed. All participants can be assembled to focus on a particular screen by pressing the 'gather' button. Audio chat is restricted to a maximum of two users at a time, and users can indicate their wish to speak via 'raised hand' cue. A polling feature is available for the instant assessment of group consensus. Long-term storage of content within the *Lyceum* environment is not practical. File-sharing among users is not supported.

The client installation package includes a comprehensive tutorial with clear instructions and visuals. Technical support is provided in online and offline HTML formats, and by email and telephone. All parts of the program are modularized to facilitate updates and product reliability. *Lyceum* is hosted only on the OU's master server, which administers the software updates, authentication of users, and the distribution of resources to users. If the service malfunctions, the event is logged to assist developers in the design of upgrades. Slave servers are responsible for handling events associated with particular virtual rooms. This design enhances the software's scalability, allowing simultaneous access to hundreds of users in multiple groups. The minimal technical specifications to use *Lyceum* are a PC supporting *Windows/98* and, *DirectX 8*; 64 MB of RAM; 50 MB of free disk space; a 16-bit sound card; and Internet connectivity at 56K or higher. With this particular configuration, there is slight but tolerable latency in the transmission of audio and visual data.

Silicon Chalk

Silicon Chalk is an integrated interface designed to enhance student learning via broadcast and archived presentations. The instructor can collate course content featuring slide presentations, instructor audio, Web co-browsing and whiteboard activities, interactive exercises, synchronous text-chat, polling and quizzes using multiple question formats, and applications/ file-sharing. Course access is password-protected; the participant list is displayed during the class; and the instructor can manage student information and tool use. As instruction is delivered, it can be recorded on the student's computer with individualized student questions, comments, and annotations. Notes may be added, edited, and sought by keyword/ phrase. Students may mark questions as private or anonymous. New questions and assignments may be completed for automatic downloading to the instructor the next time the student connects to the course. The instructor can receive live feedback on student pacing, the complexity of activities, and network bandwidth usage. The recording feature enables students to participate in "live or later" instruction, and distance-based students to share the instruction and tools with on-campus students, either synchronously or asynchronously. The software interface is intuitive, though not all tools are displayed. Simultaneous tool use did not affect presentation quality during the evaluation sessions, and recorded audio was consistently clear. The program prioritizes data to ensure highly important data is transmitted first.

The *Silicon Chalk* software is installed via either a local area network (LAN) or by wireless peer-to-peer network. Optional Distance Application Server software is required to enable access for distance-based students. Pilot-test software can be freely downloaded for the creation of one course during a four month period, or be purchased for a four month period at reduced cost. Minimal system requirements include a *Pentium* III with 256-MB RAM, *Windows 2000/XP*, a network interface card, and a broadband or wireless network connection. The evaluation team found the download of the trial software file (10-MB) troublesome. Despite three attempts on dial-up (2-4 hours) and broadband connections, the files could still not be extracted. Attempted installation on a networked computer caused the user's entire network to become sluggish as numerous registry files were loaded. Due to these difficulties and limited access to the high-end computers recommended, live instructor-student connection could not be tested. Online demonstrations recorded by the vendor were reviewed instead. This experience suggests that the product may not currently be useable on a wide range of distance-based student hardware platforms. Installation from CD-ROM to a non-networked computer was more successful, and the creation of course activities was easy and intuitive: it took only minutes to create a simple activity including a *PowerPoint* presentation, audio commentary, and a simple quiz, and to view the recorded presentation adding notes and commentary. Scalability was not tested, although the vendor indicates that the product can accommodate more than 3,000 users/computers. The *Macintosh* platform is not currently supported. Annual licensing costs are based on per-user or per-computer rates. High-quality technical support for the product is available via toll-free telephone, email, and online forums, tutorials, and white papers.

Conclusion

In general, these four learning management systems provide rapid, intuitive, user-friendly interfaces and a range of features necessary for online collaborative activities. *CentraOne*'s lower student hardware/ software requirements are appealing for distance education users, though the product's institutional costs are relatively high. *IntraLearn* provides a user-friendly, structured framework to handle all aspects of course delivery, and can be customized in numerous ways to

meet the needs of a wide range of clients. *Lyceum* is an effective synchronous, collaborative tool developed to enhance the specific interactive needs of distance-based students at the British Open University. It provides good audio conferencing and supports it with highly functional visual components. One weakness is its limited capacity to share information with resources outside the *Lyceum* environment. *Silicon Chalk*'s high-end hardware requirements will make it an expensive interface for distance-based students, although the institutional costs are reasonable. The lack of integrated asynchronous and synchronous communication in *Silicon Chalk* limits its collaborative potential. Instant messenger and Web-based forum software could be added to enhance interaction among distance students. The four products are thus variously appropriate to different distance-learning situations and should be carefully evaluated in that light prior to purchase.

The next report in the series reviews a vendor-assisted evaluation of a learning management system.

N.B. Owing to the speed with which web addresses become outdated, online references are not cited in this report. They are available, together with updates to the current report, at the Athabasca University software evaluation site: <http://cde.athabascau.ca/softeval/>. Italicised product names in this report are assumed to be registered trademarks.

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