International Review of Research in Open and Distributed Learning

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Volume 2, Number 2, January 2002

URI: https://id.erudit.org/iderudit/1073061ar
DOI: https://doi.org/10.19173/irrodl.v2i2.42

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Publisher(s)

Athabasca University Press (AU Press)

ISSN

1492-3831 (digital)

Explore this journal

Cite this note

Belyk, D., Schubert, J. & Baggaley, J. (2002). 5. Classification of DE Delivery Systems. *International Review of Research in Open and Distributed Learning*, *2*(2), 1–4. https://doi.org/10.19173/irrodl.v2i2.42

Article abstract

For their optimal use in distance education (DE), online educational applications need to be integrated within a comprehensive course management system (CMS). Such systems are server-based software that supports the development, delivery, administration, and evaluation of online learning environments. The selection of an appropriate CMS should be considered from the multiple perspectives of the student, the course developer, the course instructor/ tutor, the technical support staff, and the DE institution's administration. The current evaluation of CMS packages was conducted by a team of individuals with experience and contacts in relation to each of these DE user types. The report compares a series of CMS packages in terms of their range of features, and in relation to their satisfaction of international online education standards.

International Review of Research in Open and Distance Learning

Volume 2, Number 2. *ISSN: 1492-3831*

January - 2002

Technical Evaluations Report

5. Classification of DE Delivery Systems

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Abstract

For their optimal use in distance education (DE), online educational applications need to be integrated within a comprehensive course management system (CMS). Such systems are server-based software that supports the development, delivery, administration, and evaluation of online learning environments. The selection of an appropriate CMS should be considered from the multiple perspectives of the student, the course developer, the course instructor/ tutor, the technical support staff, and the DE institution's administration. The current evaluation of CMS packages was conducted by a team of individuals with experience and contacts in relation to each of these DE user types. The report compares a series of CMS packages in terms of their range of features, and in relation to their satisfaction of international online education standards.

Course Management Systems

In general, CMS methods share these characteristics:

1. They favour a *learner-centred approach*, involving the following media and methods:

- Asynchronous: group-based text discussions, commonly learner-led
- Synchronous: individual or small group text discussions, learner or teacher-led

2. They contain a range of *content tools*:

- Authoring tools for course development and revision
- Navigation tools

3. They contain *collaborative tools*, involving asynchronous and synchronous communication:

- Email (with support for attachments)
- Text chat communication.
- Bulletin board (with support for attachments).
- Presentation tools (e.g., a whiteboard for collaborative drawing and sketching).

4. They contain student management tools, such as:

- Secured access (e.g., password-protected logins)

- Registration procedures
- Withdrawal procedures
- General student tracking functions

5. They contain *quiz and survey tools*, such as:

- Report generation (with statistical analysis)
- Student self-assessment routines
- Student evaluation
- Course evaluation

Product Classification

Throughout the review process, the perspective of the student user was the major focus, while the other perspectives were addressed in terms of their relationship to the student. Our description and classification of products is based on the vendors' descriptions, and on a range of earlier comparative analyses (Boston University, 2001; Centre for Curriculum, Transfer and Technology (C2T2), 2001; Consortium for Information Technology in Education (CITE), 2001; Marshall University Center for Instructional Technology, 2000; University of Illinois at Urbana Champaign, 2001; University of Manitoba; Rollinghoff, 2001; Windman, 2001). Many products identified as course/learning management systems are not marketed as such, but as "as a learning portal, best-of-breed technology, an end-to-end solution, an e-learning solution, a total solution…" (Broadbent, 2000). Companies such as e-com Inc (producer of the Theorix LMS), compete with CM systems by offering the capability of running "courses originally developed for WebCT (etc.,)" (www.theorix.com). Other vendors use the terms LMS and CMS interchangeably (CITE, 2001, p. 13; Hall, 2001). The CITE (2001) software categories have therefore been used in the analysis. These, and further descriptions of the product genres, are given in Appendix 1.

A series of 31 products was reviewed, which were generally found to fall into one category only. All share the aim of facilitating or managing the development, delivery, administration and evaluation of online learning. The list is not claimed to be comprehensive.

a. **Course Management Systems:**
Anlon Academic; Blackboard; Enterprise Education Server; IntraLearn; Learning Manager; Learning Space; Mallard; Prometheus; Theorix; TopClass; Virtual U; WebCT

b. **Learning Management Systems:**
Docent; Generation 21; Knowledge Planet; Saba Learning Enterprise; Learning Platform; WBT Manager

c. **Synchronous Environments:**
LaunchForce; LearnLinc

d. **Total Solutions:**
ECollege; Embanet; Jones e-education; LUVIT eLearning

e. **Related Tools:**
Authorware; First Class; Pathware; PlaceWare; Questionmark; Trainersoft; WebBoard

The products were next reviewed in terms of their:

- **Accessibility and testability:** Ready access to free demonstration software in order to test the product's appropriateness.

- **Usage:** The product's use by major academic (post-secondary) or corporate (business) clients for DE and training.

- **Standards:** The extent to which the product subscribes to the international software standards of the Common Technical Framework (Advanced Distributed Learning Partnerships: ADL), ensuring SCORM, IMS, IEEE, AICC, ISO compliance.

Relatively few of these products' Web sites produce sample courses to facilitate comparison studies such as this. At the time of publication, product information was available allowing the classification of five of the 31 products in the above terms: *Blackboard*; *LearningSpace*; *Prometheus*; *TopClass*; and *WebCT*. The attributes of these specific products will be reviewed in a future report in this series.

Conclusions

Athabasca University (AU) uses two of the five products listed above: *Blackboard* and *WebCT*. The selection of course delivery systems is left largely to the discretion of individual teaching centres, though it may also relate to the standards imposed by inter-institutional course-sharing arrangements: e.g., the Global University Alliance applies the *Blackboard* standard. Some Centres, typically those whose faculty members possess online programming skills, use a range of non-proprietary software and usually combinations of freeware customised to the Centres' specific needs. For example, the CDE uses this approach in maintaining a Web site that provides its students with login access to all of the Centre's courses. The site uses an online editing facility that allows faculty members to update their online course materials directly on the Web. Evaluation activities reported in these reports teach the students about the range of DE methods. They also allow the Centre to draw conclusions about software options and DE student preferences for them. The CDE's evaluation Web site is designed to share these conclusions with the international DE community.

This IRRODL series of software evaluation reports will continue with reviews of other online collaborative tools.

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

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Appendix

Classification of Online Course Delivery Systems

Category	Definition	Characteristics	Comments
Course Management Systems	Server-based software, which supports the development, administration, delivery and evaluation of Web-based asynchronous online learning environments	• Restricts course development to specific educational approaches, interface designs and learning tools • Requires minimal-to-moderate technical/ graphic skills for developers/ instructors • Has synchronous chat capabilities but is limited to little or no audio/video-conferencing capabilities • Features tracking of student management and progress	• The largest category of online learning environments • License fees and support costs are considerably lower than Learning Management Systems • Primarily targeted at educational institutions • Rarely supports third party software
Learning Management Systems	Software primarily designed to manage externally developed online learning on a large scale	• Has highly flexible presentation options • May offer separate courseware products • Has extensive course management capabilities	• Cost can be 10 times that of Course Management Systems • Primarily targeted at corporate training and large well-funded educational institutions • Supports third party courseware
Synchronous Environments	Web-based software which supports real time audio/video communication	• Has some support for asynchronous communication, and for student management and progress tracking • Includes instructor-led talking-head video/ formal seminar formats	• 74 per cent corporate Web-based conferencing is for presentation; 26 per cent for collaboration and small meetings • Bandwidth and cost issues for students and institutions
Total Solutions	Software and technology infrastructure allowing human resources services to develop and deliver online courses	• Provides a learning environment hosted by the vendor • Vendor's development teams work with an organisation's instructors and content experts	• Avoids local cost of technology infrastructure, and of hiring, training and 'back-filling' staff • Speeds development and availability of large numbers of courses
Related Tools	Web-based publishing, collaboration and testing software used to develop and support online learning	• Flexible in appearance, instructional design and functionality • Requires highly developed technical, graphics and/or design skills	• Free or low cost • Avoids license fees and support costs

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