Blackboard, Building Blocks and Libraries

A Position Paper on the Untapped Potential of Library Integration with Blackboard’s e-Education Systems

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Introduction

Libraries are the repository and managers of information resources at education institutions. Because libraries are essential to the education experience, Blackboard believes expanding student and faculty access to the library’s digital content is an opportunity to improve educational outcomes. Integrating e-Education systems with the library’s digital resources will allow educational institutions to better share knowledge, incorporate high quality digital content into the learning environment and provide a seamless education experience for the student. In short, breaking down the boundaries between library information and e-Education systems can deliver meaningful, visible benefits to the education environment. This under appreciated and under invested arena for systems integration offers value to students, faculty, and librarians.

Not surprisingly, institutions are in the midst of defining a vision for interoperability between library information systems and e-Education systems. As David Cohen, Dean of Libraries and Academic Information Sciences at the College of Charleston writes, “Integrating course-management software with the library’s digital offerings is essential for getting the maximum value from the institutional investments of both money and expertise.”

As the only comprehensive provider of a suite of enterprise e-Education systems, Blackboard is uniquely positioned to support the integration of library technologies into the broader education environment. From digital asset management, to e-Learning, to student portal services and eCommerce, Blackboard’s suite of applications support multiple aspects of the daily student experience. Drawing on this experience, the following position paper is intended to spark discussion and solicit feedback on the value and form of library integration in today’s networked learning environment.

Blackboard and Building Blocks

Blackboard’s suite of applications include:

- The **Blackboard Learning System™**, an enterprise course management system
- The **Blackboard Content System™**, an enterprise learning content management and e-portfolio system (in beta)
- The **Blackboard Portal System™**, a system for managing and delivering portal content and communities

Integration Ideas

- Search multiple library resources (physical collections, electronic databases and indexes, digital content repositories, etc.) from within the Blackboard systems.
- From within the Blackboard Control Panel, create dynamic links to the library’s bibliographic records or content items in library-managed learning object repositories, digital archives, and digital collections.
- Make content created or stored in the Blackboard Learning System or Content System available for indexing and searching via library management systems.
- Generate pre-defined searches and embed them within a course to give students access to the most up-to-date resources available.
- Pre-populate links to appropriate electronic databases and indexes into course sites based on course disciplines.
- Submit and manage e-reserves from within a course site.
- Communicate online and in real-time with reference librarians and leverage networks of reference librarians through virtual reference.
- Check status of borrowed books, reserve materials, and pay fines through the Blackboard Portal System.
- Use the Blackboard Transaction System-powered campus ID card to check books out from the library and pay library fines.

- The **Blackboard Transaction System™**, a system powering commerce and access, both through campus ID cards, mobile devices and the Web

At the center of all four systems is Blackboard’s Building Blocks™ technology, an open architecture designed to encourage and support the development of third party applications which extend Blackboard. The Building Blocks Software Development Kit (SDK) and Building Blocks developer program include a complete set of development, installation, configuration and user interfaces to fully “productize” the discovery and adoption of unique add-ons in a standardized way. To encourage innovation, Blackboard has done more than release application programming interfaces (APIs); we have provided a comprehensive user interface.

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for installing and monitoring third party tools, as well as delivering those tools as natively as features that ship with the core Blackboard system.

While many institutions already place a link to the library’s website in the Blackboard Portal System or in courses delivered through the Blackboard Learning System, rarely do they include true technical integration of those resources. Building Blocks technology provides the necessary “hooks” to directly integrate library and critical e-Education systems in a robust and powerful way.

For example, through Building Blocks, some library information systems are already integrated with the Blackboard Transaction System to allow the campus ID card to be swiped at the circulation desk as a library card. Now, the Building Blocks technology allows for data about courses and users, as well as content, to pass back and forth between the library information systems and the Blackboard Learning System, creating a tighter relationship between these systems.

These integrations present an opportunity for librarians to leverage their technology investments to deepen their relationships with the classroom. Blackboard is making this opportunity in collaboration with library information system vendors and our common clients. We are demonstrating our commitment to this critical transformation in learning by:

- forging the most comprehensive set of library technology relationships with more than 10 key library information systems vendors
- prioritizing internal development of technologies to support library information system integration such as support for library standards, such as Z39.50, in future releases of the Blackboard Content System
- partnering with our clients to ensure successful information flow among libraries, teachers and students, including live integrations and best practice development.

### Evolution of Library Technologies

Libraries began implementing library information systems decades ago. These systems automate the business of the library including acquisitions, cataloging, circulation, reserves and interlibrary loans. The yards of card catalog drawers were replaced with online public access catalogs (OPACs). And as part of this process, libraries took early steps towards providing patrons with access to commercial databases that index journal and periodical articles; delivering the full-text of these articles in digital format would not be far behind.

Increasingly, the resources that the library manages are digital in nature. In today’s networked learning environment, the academic library is more than just print materials, though such resources remain important. According to the Association for Research Libraries’ *Supplementary Statistics 2001*, “[T]he percentage of the average library budget that is spent on electronic materials has increased more than fivefold, from an estimated 3.6% in 1992–93 to 19.6% in 2001-02. 110 ARL university libraries reported spending more than $171 million on electronic resources in 2001-02.”

This clear trend toward electronic resources and digital access shows no sign of abating, and library information systems are evolving to respond. While once oriented towards the challenges of circulation and catalog management, library technologies now address the challenge of direct instructional and research patron services. Writing in *College & Research Libraries News*, W. Lee Hisle, chair of the Focus on the Future Task Force and former president of the ACRL, said, “Though access to information is increasingly decentralized, and computer labs now compete with libraries as campus gathering points, librarians must demonstrate to the campus community that the library

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1. ARL Supplementary Statistics 2001-02 Published (http://www.arl.org/arl/pr/suppl_stats2001-02.html)
remains central to academic effort." Library information systems now enable online access to library patrons while helping librarians manage digital library resources.

Today, library technology manages a variety of activities, including library information portals, federated searches (searching multiple catalogs, collections, and databases at once), e-reserves and digital resources. Unlike traditional library information systems, the primary users of the new digital library resources are most often the library patrons: students, faculty and researchers. These emerging technologies create opportunities for much tighter integration between library resources and an e-Learning platform. The new library information systems have far more constituents using its resources in new and vibrant capacities.

Course Management Systems and the Library Imperative

Yet in a networked learning environment, valuable digital assets do not always reside within the domain of the library. Increasingly, educational content is being created by faculty and students on campus in course management systems like the Blackboard Learning System. As the value and variety of such assets increases, institutions seek technology solutions like the Blackboard Content System to store, version, track and enable their broader reuse beyond individual Course Sites.

Today, that content is inaccessible to library information systems, but Blackboard envisions a future where a library search returns not only catalog records and articles from electronic journals and databases, but original learning objects used in the course management system, and authored and shared by the academic community.

With integration between library information systems and Blackboard’s e-Education systems, content valuable to education will flow in both directions: users will access library resources from within the Blackboard platform and faculty can choose to enable indexing, cataloging, and searching of their own content. This will increase the resources available to students, teachers and librarians.

These Blackboard-library integrations help enhance the important role the library plays in the academic experience, create opportunities for librarians to play even more meaningful roles in the online classroom and enable faculty and students to use library resources more effectively for teaching and learning. Bringing the library and librarians into the online education environment streamlines the use of library resources and increases access to critical information (particularly for distance education students). Through cooperation, collaboration and partnership, academic institutions, library systems vendors and Blackboard can make this robust, interoperable environment a reality.

A Networked Learning Environment

At many academic institutions, faculty and students are already using library resources within the Blackboard Learning System, but in a fashion that is not fully integrated and frequently relies on copy-and-paste or logging in to multiple systems. Integration of authentication mechanisms create easier access. With Blackboard Building Blocks, access points to digital library resources can be incorporated directly into the Blackboard user interface. Integration agents can allow catalog records, metadata, links to digital resources, or the resources themselves to

Imagine: The university has a collection of hundreds of World War II era combat film clips that have been digitized and stored in a content repository. An American History professor searches through the collection for relevant video clips and embeds links to that media in the appropriate Learning Units in her Blackboard Learning System course.

The Washington Research Library Consortium (WRLC), representing seven Washington, DC-area universities, used the Blackboard Building Blocks technology to create a LinkMaker, a tool that allows Blackboard Learning System instructors to search the WRLC database and embed in the course site a special link (known as an OpenURL) that will always point to that resource, even if it moves.

The Ruhr-Universität Bochum (Bochum, Germany) used Blackboard Building Blocks to integrate their OPAC (Online Public Access Catalog) with the Blackboard Learning System ML. Instructors can pre-define search parameters and embed a link to those search results within the course Web site to generate reading lists, bibliographies or research guides.

be “published” directly into the Learning System without need for cumbersome switching of applications. Through the Building Blocks technology, library information systems vendors and Blackboard can provide our common clients with a seamless and easier-to-use networked learning environment.

The vision for integration between library information systems and the Blackboard platform is represented by four broad activities:

- Discover
- Assign & Reserve
- Measure
- Share

By no means do these four categories describe all of the ways that libraries touch the education process. Instead, they provide a framework to think about how faculty, students and librarians might make use of library resources within the e-Learning environment. Together these four categories of activities form a cycle representing the flow of content between library and e-Learning platforms. The end result is a more dynamic and effective learning environment.

Discover

In the Control Panel of his Blackboard Learning System course Web site, a business ethics professor accesses a tool labeled “Add Library Resources.” Based on the discipline associated with the course ID, the tool automatically suggests business publications and ethics journal databases. The professor selects the databases he wants to recommend to his students, as well as bibliographic records for other library resources. With a click of a button, the collection is automatically created within a Resources area of the course site, with all relevant information populated without repetitive typing or cutting and pasting.

The amount of information managed by the library continues to dramatically increase. Library information systems vendors have responded by providing even more robust and usable tools to manage, search, and deliver library resources. The next step is to enable the searching of and access to content directly from within the course management system. Through integration between the library information systems and the Blackboard platform, faculty, students, and researchers will be able to:

- Conduct a single federated search from within the course site across various library catalogs, databases, special collections, and course management content institution wide
- Communicate online through one click access from the
course environment, synchronously and asynchronously, with reference librarians who can provide research assistance or escalate research questions to specialized libraries around the world

• Based on a course’s discipline, correlate discipline-specific library databases with course Web sites and embed links to those databases into the course site

Assign & Reserve

As a social psychology professor is building her course in the Control Panel of the Blackboard Learning System, she accesses a library search tool to find information on nonverbal behavior. She defines several relevant journals that the library subscribes to, the library’s own digital collection of learning objects related to psychology, and resources made available by her colleagues from their own Blackboard course sites. Several seminal articles and a great learning object show up in the results. By checking a few boxes she can automatically publish links to these resources in her course. With the library integration, students who click the links will automatically be authenticated through to the appropriate resource and she can use Blackboard’s tracking feature to confirm who has read the materials.

Discovery is only the first part of a cycle. Once the library patron finds the appropriate resources, he or she needs the appropriate mechanisms to make effective use of those resources in the context of teaching, learning and research. Integration of the library’s existing mechanisms for accessing digital resources online with the content delivery capabilities of the institution’s Blackboard platform helps teachers and learners bring those resources into the learning environment. From within the Blackboard Learning

Imagine: Through a Blackboard Portal System module, a distance education student taking a biology course at a community college makes an online request to a reference librarian for help on a retrovirus research question. Through a live, collaborative session, she interacts with the local reference librarian, but the local librarian doesn’t have the resources to provide the answer to the student’s question. The question is submitted via a reference network, routed to an appropriate library, and an answer is provided by a reference librarian at a medical school in another state.

Interfaces between integrated library information systems and the Blackboard Transaction System exist for products from:

• Dynix
• Endeavor Information System
• Innovative Interfaces
• Sirsi
• VTLS

See the Building Blocks Catalog (http://www.blackboard.com/addons/b2/catalog.htm) for more information on these Transaction System interfaces.

System, faculty and students will be able to:

• Submit copyrighted library resources to an e-reserve system to manage access in the Blackboard Learning System in a manner consistent with fair use guidelines
• Incorporate library resources into course content, lessons, assignments and assessments. Library resources include:
  – e-reserve items
  – individual digital content items or learning objects
  – librarian-created resource guides and tutorials
  – entire databases or collections
  – pre-defined, tailored searches in the library catalog

From within the Blackboard Portal System, faculty and students will be able to:

• Place the physical resources (books, journals, articles) on hold at the library to pick up the next time they are on campus
• Check on resources circulated to them and fines due
• Launch the library’s virtual reference tool to solicit help without having to drive to campus

With the Blackboard Transaction System, the library will be able to:

• Manage access to physical resources (e.g., circulation,
access to computing, printing, and copying resources, etc.)

- Check out books and resources and pay fines (OneCard capability)

Measure

An academic library subscribes to several general engineering databases. Seamless access to these databases is available to students in the freshman engineering sequence through integration with the Blackboard Learning System. By reporting on the usage of these databases through Blackboard, the librarians discover that one of the databases generates very little traffic, so they make plans to highlight that database in their student education. The librarians also notice that much of the research is happening in the evening hours, so plan to schedule virtual reference services are adjusted to meet the peak hours of usage.

The reporting capabilities of library information systems provide a clear picture of patterns and trends of usage. Combine this with the ability to include those digital resources within the online course environment, and librarians, faculty, and administrators have a powerful tool to determine the direct impact library resources are having on the academic experience. From within the library information system or Blackboard Learning System, librarians will be able to generate reports on usage of library resources to measure impact of library resources on education and adjust efforts accordingly.

Share

A Calculus professor creates a successful exercise in his Blackboard Learning System that demonstrates long division of polynomials. Recognizing that other math professors on campus might find this valuable, he publishes it to the Blackboard Content System which stores digital assets used in multiple Course Sites. He also checks a box to allow this item to be searched as part of the institution's digital collections. He is prompted to enter metadata (Title, Creator, Subject, Description, Date, etc.), and submits the form. Now, this learning object can be discovered by other faculty who are using the library search tools to find calculus-related resources.

While library information systems are providing more effective ways for faculty and students to find and access educational content, Blackboard’s e-Learning platform is increasingly developing valuable ways for faculty and students to create and manage this content. Melding library information and course management systems creates an environment where content or lessons created by teachers and learners can be more effectively shared within the educational community.

Conclusion

At any educational institution, the library is the most authoritative and well-organized repository of educational content. At those same institutions, the e-Learning platform has become a mission critical part of delivering teaching and learning. It is time to build bridges between these two important components of the institution -- a partnership of resources, relationships and technical integrations. Blackboard is committed to doing our part to enable effective integrations between our platform and library systems. Working with client institutions, library information system vendors and the librarian community, Blackboard will help create a fully interoperable learning environment that transforms the education experience.