Implementation of a Single NDUS Learning Management System

August 16, 2016

Darin King
Chief Information Officer
North Dakota University System
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Introduction

Historical Perspective

The North Dakota State Board of Higher Education (NDSBHE) first stated the intent to develop a single learning management system (LMS) that would be used by all North Dakota University System (NDUS) institutions in a document entitled “Maximizing Results through Efficiencies” presented in November of 2011. Partial progress was made when NDUS implemented a single instance of an open source LMS (Moodle) for five institutions and three NDUS institutions partnered to implement a commercial LMS (Pearson eCollege).

On May 24, 2016 the NDSBHE reiterated their intent during a meeting of the full board. A motion to proceed with consolidation into a single Blackboard environment was made and passed by the board.

Current State

There are currently at three LMS systems in use across the NDUS. The table below represents the LMS solutions at each institution and how they are delivered.

<table>
<thead>
<tr>
<th>NDUS Institution</th>
<th>Current Instances</th>
<th>LMS Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minot State University</td>
<td>Blackboard Managed Hosting</td>
<td>Blackboard</td>
</tr>
<tr>
<td>North Dakota State University</td>
<td>Locally Hosted at NDSU</td>
<td></td>
</tr>
<tr>
<td>University of North Dakota</td>
<td>Locally Hosted by NDUS Data Center</td>
<td></td>
</tr>
<tr>
<td>Valley City State University</td>
<td>Locally Hosted at VCSU</td>
<td></td>
</tr>
<tr>
<td>Dakota College Bottineau</td>
<td>Software as a Service</td>
<td>Moodle</td>
</tr>
<tr>
<td>Dickinson State University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mayville State University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Dakota University System</td>
<td></td>
<td></td>
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<tr>
<td>Williston State College</td>
<td></td>
<td></td>
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<tr>
<td>Bismarck State College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lake Region State College</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Dakota State College of Science</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are currently six instances of LMS solutions. There are four separate instances of Blackboard and a single instance of both Moodle and eCollege.

NDUS institutions currently using Blackboard and Pearson eCollege are paying for the products and services. NDUS is currently paying for the implementation of Moodle at the indicated institutions.
Current Blackboard campuses are using a variety of different Blackboard products. NDUS currently provides Blackboard Collaborate (Web Conferencing) and

*Desired Future State*

The directive by the SBHE indicate the future state should be a single system focused on providing a seamless experience for users, regardless of their affiliation or role with individual campuses. This single system will improve the user experience, create educational opportunities for students, create operational efficiencies, and reduce the total cost for all NDUS institutions using the same LMS solution.

**Implementation Options**

*Blackboard Solutions Bundles*

Blackboard offers three different solution bundles. All solution bundles support either deploying the software locally through the NDUS Data Center or deploying the software through Blackboard’s hosting services. The Learning Essentials Bundle provides all of the functionality available today to NDUS Blackboard campuses and would extend additional capabilities and services to all NDUS campuses.

**Learning Bundle Solutions – Software & Services**

The Learning Insight Bundle includes additional data analytic capabilities and services. This may be of value to some campuses and could be included if determined to be cost effective. Additional details regarding the bundle and related offerings can be found in Appendix A-D.
Deployment Option #1 – NDUS Locally Hosted

NDUS would purchase and maintain the infrastructure necessary to host Blackboard for all NDUS institutions. The infrastructure would be housed in the NDUS Data Center and could comprise either a single or multiple instances of purchased Blackboard software.

Deployment Option #2 – Software as a Service (SaaS)

Blackboard would deliver the Learning Insight Bundle on a subscription basis and host it for all NDUS Institutions. This subscription service could comprise of either a single or multiple instances of Blackboard.

Implementation Analysis

PART 1 – Software Bundles

*Blackboard Solutions Bundle*

The Learning Essentials Bundle provides the basic LMS capabilities currently available to NDUS institutions regardless of the solution in place today. It also includes additional features for campuses moving to Blackboard, including content, mobile, and community features.

The Learning Insights Bundle includes additional functionality for detailed reporting and analytics. There may be interest from some campuses in this additional functionality and it could be purchased by individual campuses.

PART 2 – Number of Instances

*Single Instance*

Implementing Blackboard as a single, NDUS instance with an institutionally based hierarchy would ensure a consistent experience for all users. Students and faculty would have a single login and access to all their courses and content regardless of their home institution. Upgrades and maintenance would happen simultaneously for all institutions.

Existing Blackboard institutions currently have the ability to run scripts and queries directly against the Blackboard system. A single instance would reduce system level access for some institutional administrators, however all functionality would still be available by working with a system level administrator.

Implementation of a single instance would require an effective, representative governance model to develop common procedures and operational efficiencies for all NDUS institutions.
Building blocks are integrations between Blackboard and other systems. Current Blackboard campuses have many building blocks installed to provide a variety of functionality. An analysis is currently underway to determine if there are building blocks currently being used by campuses that will need modification or updating to work in a single instance.

**Multiple Instances**

Implementing Blackboard in multiple, institutionally based instances would provide the greatest campus level control and autonomy. Institutions would retain complete system level control of their Blackboard instance and be responsible for upgrades and maintenance.

It would be more difficult to ensure a consistent user experience across multiple instances and supporting users when problems arise would be challenging.

**PART 3 – Hosting Deployment Options**

**NDUS Locally Hosted for Learning Essentials**

By hosting Blackboard in the NDUS data center for all NDUS institutions, some efficiency could be achieved. Current Blackboard campuses would no longer have to purchase and maintain campus based hardware to support Blackboard. There would still be hardware that would have to be purchased and maintained by NDUS, but it would potentially reduce the current operational cost of running campus based infrastructure. This would also potentially require additional NDUS resources to ensure acceptable performance during peak usage periods.

NDUS would be responsible for all patching and upgrades if self-hosted. This would be done once or twice per year and require significant down time to accomplish.

In this scenario, there would not be access to the newest version of Blackboard, called the Ultra Experience. No current NDUS Blackboard campus uses the Ultra Experience today, however there is interest by some in this new version of Blackboard.

**Software as a Service (Saas) for Learning Essentials**

Blackboards SaaS offering is powered by a modern cloud based computing stack via Amazon Web Services. This would provide 99.9% uptime, on demand scalability during peak usage, and near zero downtime for updates and maintenance.

Blackboard hosts and maintains all SaaS environments, including production, test, staging, and a reporting environment (Direct Data Access) and stage. Blackboard would be responsible for all patching and upgrades. This would allow us to coordinate updates across all NDUS institutions to ensure a consistent user experience.
This offering also includes a single point of contact within Blackboard (Service Delivery Manager) for all technical support, escalation, documentation and event management. The Service Delivery Manager will also lead the migration efforts for institutions moving to a single or multiple instances.

System level access is limited to Blackboard in the SaaS offering, so it will be critical that support and communication processes between campuses, NDUS and Blackboard are clearly defined and understood by all parties.
Recommendations

**Recommendation #1**

The North Dakota University System should implement Blackboard in a single instance with institutional hierarchy.

Deploying a single instance will ensure a consistent user experience across all NDUS institutions. The institutions currently using Pearson eCollege (Bismarck State College, Lake Region State College, and North Dakota State College of Science) will be the initial institutions implemented in the single instance. Planning for migration of the Moodle and existing Blackboard institutions will commence early in 2017.

**Recommendation #2**

The North Dakota University System should select the Learning Essentials Bundle for use by all NDUS institutions and develop contractual and operational procedures for individual campuses to purchase additional solutions and services from Blackboard.

The Learning Essentials Bundle provides the functionality available today and adds a number of new features for some institutions. Individual institutions will be able to add additional features to meet specific institutional needs.

**Recommendation #3**

The North Dakota University System should enter into a contract for the Blackboard SaaS Advantage offering.

Deploying Blackboard SaaS will provide operational efficiencies, improve the user experience, and provide for increased scalability and availability.

**Recommendation #4**

The North Dakota University System must implement a representative governance model for the implementation and operations of a single instance of Blackboard SaaS Advantage.

It will be critical to engage both functional and technical stakeholders from each NDUS institution to design a governance model that will develop policies and procedures to ensure ongoing operational excellence and efficiency.
Appendix A – Blackboard Learning Essentials Bundle

Blackboard

Learning Essentials Solution Services

The Learning Essentials Solution is the first step toward a more engaging digital learning experience. With our powerful learning management system and collaborative learning environment, institutions get the tools needed to reach students when, where, and how they want to learn. The Learning Essentials Solution provides you with these benefits:

- Course creation delivery, and management
- Mobile access to courses and organizations including assignments and grades
- Flexible delivery options, including Software-as-a-Services (SaaS), self-hosted, or Blackboard Hosted
- Online Collaboration including Web Conferencing
- Share, reuse, and find quality learning objects, making it easier to build courses in Blackboard, engagement students, and achieve pedagogical goals

The services included in the Learning Essentials solution are the first step toward a more engaging digital learning experience. With our powerful learning management system and collaborative learning environment, institutions get the tools needed to reach students when, where, and how they want to learn. Many institutions have seen exponential gains in student performance and retention rates as a result of increased student engagement in the campus online learning environment.

Learning Essentials Services include:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Phase Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>The planning phase is designed to quickly and succinctly gather information from key stakeholders to address institutional goals, increase adoption, and ensure a holistic plan for all relevant technologies.</td>
<td>Three days of onsite Academic Technology Planning are dedicated to capturing critical goals for academic technology systems at the institution, drafting use cases for each system, strategies for launching technology, increasing adoption, and creating a rich eLearning experience. During the onsite sessions, a Blackboard Consultant will work with key institution stakeholders to set short and long term goals, assess risks and craft mitigations plans and create a detailed plan to help achieve institution adoption goals.</td>
</tr>
</tbody>
</table>
| System Administration Set-Up | During the System Administration Set-Up phase, the Blackboard consultant takes the outputs from the planning phase and, through a series of remote working sessions, works with the institution’s LMS. | Ten hours of remote, synchronous workshops during which a Blackboard Consultant works with your institution’s core project team to discover the possibilities for and deciding what works best for your institution. A range of topics are available to choose from including:  
  - Course Delivery Overview  
  - Community Engagement Overview  
  - Content Management Overview  
  - What’s New in the Current Release |
Appendix B – Academic Technology Planning Services

Academic Technology Planning Services

Updating technology is a time-consuming, complex task. Problems during a transition to updated or new technology can lead to lack of adoption and difficulty during subsequent change management, which creates an ongoing problem with unhappy users and constant change requests.

Blackboard’s Academic Technology Planning Service (ATP) helps clients with the initial rollout of new products and with planning for ongoing adoption of current technology. Our consultants help clients:

- Adjust to the look and feel of new releases,
- Align with overall institutional education technology objectives,
- Plan for ongoing change management associated with continuous delivery,
- Incorporate use case based best practices

The Blackboard Academic Technology Planning Service provides the necessary goal setting, subject matter expertise, planning, and change management to ensure the successful implementation or wider adoption of Blackboard teaching and learning technologies. Whether new to Blackboard or seeking to increase impact and learner experience, this service helps to ensure a smooth and well-organized path for change management leading to deeper adoption and higher student engagement.
Appendix C – Training

Training Program Development Solution
Blackboard, Inc.

Overview
The Training Program Development solution, TPD, is a comprehensive professional development package that provides organizations with the resources needed to build a self-sustaining training program at their institution.

The TPD provides ongoing, unlimited access to training materials designed to enhance learner outcomes and promote effective usage of Blackboard Products, allowing an organization’s master training team to focus on training and support instead of the development and maintenance of materials.

The solution is designed to provide current and accurate training and support material that an organizations master instructional team can use to train their learning constituents. Therefore, the package is updated on a regular basis to match the features and enhancements in the Blackboard products.

Through a series of implementation meetings, the Blackboard TPD Support Team will work with the organization’s master training team to ensure that their TPD implementation plan is designed to meet their program's unique learning, administrative, and user needs.

A TPD user’s master instructional team is enrolled in the Blackboard TPD Community of Practice. This CoP is designed to support an organization through their TPD implementation by housing training and support materials and engaging them in with other TPD users.

TPD materials are accessed via a Download Center in the Blackboard TPD Community of Practice and facilitated from an organization’s Learn and/or Collaborate instance by their master instructional team, allowing an organization the freedom to rebrand and modify the materials to meet their needs.

Package Highlights
- Online Courses
- Workshop Materials
- Supplemental Resources
- Synchronous TPD Implementation Support
- Ongoing Package Support from the Blackboard TPD Support Team
- Access to the Blackboard TPD Community of Practice
- Continuous Release Maintenance Cycle
- Available in English
- Available as a Subscription Service
Appendix D – SIS Integration and Grades Journey

Blackboard

Utilize Blackboard expertise for Grade Integration with your SIS

SIS Integration Mentoring + Grades Journey Extract

The objective of the SIS Integration Mentoring and Grades Journey Extract service is to provide guidance and support to a client with no existing SIS integration to Blackboard Learn with implementing the SIS Integration Framework and the Blackboard Learn Grades Journey functionality that was introduced in the Learn 2015 release.

This SIS Integration Mentoring service is also intended for clients implementing the IMS Learning Information Services (LIS) integration method. This service will provide the client with planning, auditing, guidance, Learn scripting training, troubleshooting and documentation for the data integration process.

This service begins with a kick-off call to determine scheduling, logistics, and proper scoping of the service to meet the client’s needs. All sessions listed below will be delivered during scheduled Collaborate sessions. The time, day, and duration of these sessions will be scheduled during the service kick-off call with the Blackboard project manager and assigned consultant. Note that Week 3 sessions can be completed remotely or onsite based on client preference and availability.

Topics:

Week 1 – Remote
• SIS Framework Technical Overview
• Data Planning Workbook Sessions
  o Discussion of SIS data lifecycle and impact on Blackboard Learn
  o SIS to Learn Field Data Mapping
• Generator Guidelines and sample files
• Grades Journey Workbook Sessions
  o Discussion of Grades Journey Integration Workbook documentation
  o Goal-setting and timeline review
• Identification of basic data elements, behaviors and business rules in order to automate processes for assignment and grade column creation in Blackboard Learn
  o Flat-file/delimited data supports the creation of assignments and weighted grade columns
  o LIS 2.0 supports the creation of manual or weighted grade columns
• Knowledge Transfer of file formatting requirements for inbound and outbound data
Appendix E – Meeting Notes

On July 21, 2016 a group representing all NDUS institutions gathered in Bismarck to discuss the Blackboard implementation. Small groups were used to capture discussions regarding the advantages and challenges to moving towards a single LMS. The following pages are the notes generated by the discussions.

Subject: One more version - includes institutions represented in the small group discussion
Date: Thursday, July 21, 2016 at 2:01:49 PM Central Daylight Time
From: Swinney, Lori
To: King, Darin
LRSC
NDSU
VCSU
UND

Advantages
• uptime
• reduction in length of scheduled upgrade times
• SaaS supports Ultra
• Single instance - Ease of use for students and faculty, single sign-on?

Concerns - Challenges
• Ultra has limited features and doesn’t support content system
• access to data
• losing system admin access
• escalating issues through NDUS
• Governance
• Faculty involvement (history of RFP)
• Rollout - resources, time & funding
• Agreement on feature availability as default on

Burning Questions
• Funding - cost to implement, cost & cost sustain
• governance is a huge concern
• How to help campuses used to having a helpdesk
• timeline for all campuses
• Differences with Ultra,

--
Lori Swinney, Ph.D.
Center for Instructional & Learning Technologies
Adj. Asst Prof, Educational Foundations & Research
University of North Dakota
370 Oxford Street Stop 7098 - Robertson-Sayre Hall 103 | Grand Forks, ND 58202-7098
701-777-3569 (office) | 701-740-1067 (cell)
Lori.swinney@und.edu
http://cilt.und.edu
Questions:

- We would like Assessment and Institutional Assessment offered in Insights
- Need for access to database

Advantages:

- UND - in favor of single instance (self or managed hosted) – have building blocks, start and end dates different than other institutions
- SaaS – updates > zero downtime
- ?on shared instance is it possible to accept updates on an individual nodes

Challenges:

- More details about the shared instance for the collaborative student/faculty.
- Help desk - difficult to drop once users are expecting it.
- What is the turnaround time is for issues to be dealt with when all sent to a single governance?
Subject: Notes from Bb Session

Date: Thursday, July 21, 2016 at 1:48:43 PM Central Daylight Time

From: Heisler, Patti

To: Tykwinski, Joe, Wray, Kimberli, Tobola, Cloy, Luke Prather, OToole, Kayla

CC: King, Darin

Clarification of SaaS environment

Advantages
- Ability to have traditional Bb 9.1, full capabilities, fully functional, ability to experiment
- AWS hosted – reliable, so much redundancy
- SaaS is where the future is – why not migrate
- Collaboration between schools, statewide training, pedagogical things
- Cost – cheaper with single instance
- Student side – login to see one interface

Disadvantages
- When it all works, it will great
- Everyone being on same thing at same time creates a potential for single point of failure
- Marriage to product as a system
- Cyclical processing – nature of remote and local computing (bandwidth, usage, resources used outside NDUS can be a cost campuses aren’t prepared for) – some campuses already at limit
- Customization – may be limited in some aspects
- Ultra is a good place to play but could be different from campus to campus
- There may be limitations on campuses adding building blocks – stifling innovation or flexibility
- Some building blocks cannot be bought unless all campuses therefore agreed limiting ability to fulfill the needs of one campus (costs could go up for everyone)
- Different needs for different tiers of schools (2-year, 4-year, research) – these needs should be documented
- A lot of questions about networking – costs, redundancy, etc. – can campuses support the new SaaS environment? Afford it?
- Development limited to Blackboard, now crowd sourced development
- Ancillary tools and services have certain levels of customization that are institution specific
- Lose command line database control

Challenges
- Cost - ??
- Governance – push to make a decision about a model that faculty and others may not be prepared to adopt
- Will decisions be made by larger campuses without input from smaller campuses
Darin,
Here are the notes from the small group discussion with myself, ScoM, and the BB folks.
SaaS Single Instance

Advantages:
As listed during presentation for SaaS in terms of technology. Single experience for NDUS students. Economies of scale.

Challenges:
Single functionality set for all institutions. Agreement across varying priorities. Assignment of access, roles, reporting, data, APIs, etc.

Burning Question:
Challenges can be met with proper governance, but the governance group/system is not defined at this time.
Thank you,
Zak - Group 1