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Executive Summary

In response to feedback from students, faculty, and staff, Teaching & Learning Technologies began an effort in spring of 2015 to investigate potential alternatives to Blackboard as our enterprise learning management system (LMS). The rapid growth of Canvas in the marketplace among our peer institutions brought it quickly to the forefront of our attention, and we assembled a group of faculty to perform an initial assessment of the platform in their classrooms in fall of 2015. That assessment was expanded for spring semester 2016, concluding with a total of 82 pilot courses, 77 faculty participants, 2,450 students, and over 100 sandboxes and organizations testing and evaluating the Canvas platform.

As we near completion of our initial cohort of Canvas pilot faculty and students, we have several conclusions:

- Faculty and students who responded to surveys favor a move to Canvas. 81% of spring pilot faculty report preferring Canvas; 59% of students. Review of peer institutions conducting Canvas evaluations show similar patterns in pilot survey results.
- Students are vocal about inconsistent LMS use by faculty across the board, as well as annoyance with having to use two LMS’s during the pilot. This strongly suggest that any move be expedited to limit confusion and frustration.
- Faculty and students historically have reported a consistent frustration with the “clunky” nature of Blackboard. Some of those frustrations are obviated by Canvas’ more modern interface and underpinnings, which translates into significantly increased ease-of-use ratings (74% of faculty surveyed rate Canvas as very easy to use, with Blackboard’s ease of use rating at only 20%).
- Faculty survey data shows the top three Canvas features used by faculty were: Posting announcements, creating assignments, and posting grades using the gradebook. The most popular features used by pilot faculty were Roll Call, Scheduler, and SpeedGrader.
- Canvas is on a significantly more aggressive update schedule than Blackboard, and its roadmap and direction are clearer and better articulated.
- Using a cloud-hosted learning management system has numerous advantages, including reduced liability for our local infrastructure, greater vendor engagement and, ideally, the ability to focus staff resources on improving process rather than troubleshooting problems.
- Moving to a cloud-hosted LMS also has some downsides, including greater opacity when solving problems, less control over permissions and interface, and reduced access to logs and usage data. However, these downsides would likely be present in the future roadmaps of both platforms, as Blackboard’s product roadmap is entirely focused on the SaaS space, with plans for significant user-interface changes and decidedly less clarity in product deliverables.
- With regard to functionality, there are no critical features in Blackboard that cannot be provided by Canvas, either by the core application or with external tools. In fact, many campus collaboration tools are easier to integrate and connect with the Canvas cloud infrastructure (Box, Ares, ECHO).

In summary, our recommendations are as follows:

- Adopt Canvas as the campus Learning Management System.
- Develop and communicate a comprehensive LMS transition plan that targets all new course sites using Canvas by Fall 2017.
- Create and document a best practices course gallery, complete with course templates to facilitate faculty transition and encourage exemplary course design.
- Develop processes and practices around the evaluation and adoption of LTI tools and API connectors that extend the Canvas product.
- Secure Instructure Tier 1 support to provide 24/7 support for faculty and students for the duration of the transition/implementation.
- Outline options and best practices for organizations (non-course) use of Canvas, with guides and links to additional campus collaboration tools (i.e. Box, Office 365 Sites, OrgSync, Canvas Groups).
LMS Review/Canvas Pilot Project
Recommendations – Spring 2016

Pilot Project Overview

A. Premise:

In the fall of 2014, LITS completed two Blackboard-related projects (Blackboard CSI – Continual Service Improvement – and Blackboard Analytics) to establish and measure standards for customer satisfaction, product functionality, product usability, and instructional technology methodology. While Blackboard use, as measured by number of active courses, increased for Emory and Oxford, the user baseline measures gathered revealed a high rate of dissatisfaction with the usability and performance of the Blackboard learning management system. Key take-aways from the projects include:

• High rates of dissatisfaction from students and faculty about their experiences using Blackboard
• Adoptability of Blackboard tools and features is relatively low. While overall use of Blackboard has increased across campus to over 60% of courses using it in some way, that usage is mostly centered on document storage and class communication, with more interactive tool usage being decidedly low.
• Frustration among students about inconsistency of faculty tool use within their Blackboard-enabled courses.
• Many peer institutions have moved from Blackboard in the last 2 years, noting similar faculty dissatisfaction with usability and functionality.
• Reports from our Blackboard technical team note that Bb technical support is non-responsive or very late to respond to software and QA issues.
• Given Blackboard’s high cost of ownership for in-house infrastructure, associated operational risks, and Blackboard Inc.’s increased focus on their Software-as-a-Service products, we identified a need to seriously consider moving to Blackboard’s SaaS product if we are to continue with Blackboard as the campus LMS. It was deemed prudent to begin a learning management system (LMS) evaluation on a shorter timetable.

LMS Market Trends & Peer Institutions

The LMS market, like other technology industries, is undergoing a major shift currently from on-premises solutions, where the LMS is physically installed and managed by the institution, to a cloud solution, where the LMS is hosted or managed by the LMS provider. Emory’s current LMS is on-premises Blackboard Learn 9.1 and is supported with local staff, servers and storage. Our license with Blackboard 9.1 expires in the late summer and is renewable annually.

Blackboard’s current roadmap is focused on the SaaS space, with new product development only available to Managed Hosted or SaaS customers and minimal continued development for on-premises 9.1 installations. Blackboard’s current strategy is dominated by an interface paradigm called Ultra that represents a substantial change in the user experience. SaaS Blackboard will support a legacy Learn 9.1 look-and-feel, as well as an Ultra-themed version of the Learn 9.1 interface, but most of the strategic focus is on the Ultra Course Experience. This entirely new Blackboard concept takes many of the rapid development practices previously adopted by Canvas and is an attempt to bring Blackboard’s interface and pace of innovation up to modern standards.
The Ultra interface is, as of this writing, in a very early development phase and supports only the most basic course functionality. Development and delivery of fundamental technology required to support even the most basic courses has been slow in coming, and there have been numerous missed delivery dates and a confusing and disjointed rollout process and strategy. The current technical preview suggests a user interface direction that could prove difficult to support and socialize with faculty, and there is some concern about Blackboard’s ability to deliver as promised.

Based on research of our peer institutions, the Instructure Canvas cloud solution/hosted platform is the leading alternative to Blackboard, with the majority citing ease of use, core LMS functionality, and robust cloud-based services as key to selection.

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<th>Institution</th>
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**Emory LMS History**

The history of Emory University’s LMS use has been evolutionary. Learnlink, a messaging system based on the FirstClass platform, began as an email/e-bulletin board platform and was used unofficially as an LMS by many faculty members for years. Goizueta Business School also had a separate installation of FirstClass that served as their primary LMS during the same time period. Blackboard has been in use at Emory since 2002, but was initially an opt-in service for faculty with inconsistent adoption. Due to market trends moving toward Web-based solutions rather than FirstClass’s more archaic client-server model, both Learnlink and the GBS FirstClass services were decommissioned in 2014, making Blackboard the only supported LMS for Emory’s campus.

Due to faculty demand and student expectations, LMS use has become integral to students’ learning experiences, faculty teaching and research efforts, and institutional communication for Emory. Since LITS began supporting Blackboard more than 12 years ago, we have not formally assessed its effectiveness compared to other LMS products on the market nor assessed the business value it adds for
our teachers and learners and the schools they support. Both objective and anecdotal data point to Blackboard as a service that faculty and students have come to depend upon, even as they struggle with its archaic user interface and inconstant function.

B. Pilot Goals:

The goal of the pilot was to evaluate and recommend a best-of-breed LMS solution that will provide the best combination of functionality and usability, as well as can deliver sound pedagogical tools to Emory, all while gaining the highest possible adoption in order to enhance academic instruction for students and faculty. The state of our current Blackboard infrastructure makes this effort additionally challenging because of the breadth of use cases and the lack of standard methods for individual faculty course creation.

One of the most common complaints about Blackboard, both in objective survey data as well as subjective conversations with faculty and students, is the opaque and dense nature of the user interface. Faculty and students alike express frustration with the lack of standard Web UI conventions like drag-and-drop file uploading, as well as the ways in which functionality, where present, is obfuscated by the complexity of the interface. One of the most common issues we experience with new Blackboard users is the difficulty in figuring out how to make a course available to students. The process is required by every faculty member to enable their courses, and takes five clicks into the control panel in Blackboard. The same process takes a single click in Canvas and is presented at the top of the course home screen in vivid color.

The initial semester of the Canvas Pilot project was focused on an assessment of overall functionality and to evaluate the degree to which Canvas would be an adequate replacement for Blackboard. Our focus was on intensive support of a small number of courses to learn and assess the platform. The second semester pilot was more far-reaching, with the intent to see if Canvas could provide an appropriately robust experience for some of our more demanding LMS customers. We took advantage of the opportunity to experiment with the gradebook, communication and assessment tools, and to evaluate Canvas’ support options.

C. Pilot Schedule:

In March 2015, a call for participation was announced through the Instructional Design & Technology Community of Practice (IDTCoP) for faculty and staff who would be interested in piloting Canvas for Fall 2015. Teaching & Learning Technologies then vetted faculty who responded, to ensure a diverse set of courses, students, and instructional content. Eighteen (18) courses were selected to pilot the Canvas LMS at Emory for Fall 2015 semester. Those courses were representative of all of the major academic units at Emory University and Oxford College.

A similar call for participation was announced in November, 2015, for a spring 2016 expanded pilot. The expanded pilot increased the number of total pilot courses to 82, with 77 faculty, 1,900 students, and
112 sandbox/organizations testing the Canvas platform. *See Appendix 1 for full list of pilot faculty/courses.*

**Schedule**

The project schedule was developed to pilot the LMS at the beginning of the University’s academic year (fall semester). It was expanded for spring 2016.

| April –May 2015 | Call for faculty participation & vetting of submitted courses  
Announcement of Pilot campuses and courses  
Set up pilot environment and get access to Canvas environment  
Pilot project team kick-off meeting |
|-----------------|---------------------------------------------------------------|
| June 2015       | Development of training and documentation  
Set up Canvas pilot environment  
Create test course sites for participants  
Set up communication mechanisms (listserv, discussion board) for project participants  
Team attended Instructure conference to gather data and learn about best practices |
| July-mid August 2015 | Orientation and training for faculty pilot users (18 total)  
Start design course sites for fall courses  
Beginning of consultation and support provided to faculty  
Enrollment of students |
| August 2015     | Delivery of courses utilizing Canvas for Fall 2015  
Begin development of project assessment and evaluation tools |
| September – October 2015 | Assessment and evaluation tools completed  
Continuous consultation and support provided to faculty  
Collect data on faculty and student use of Canvas  
Complete analysis of data gathered from faculty and students |
| November 2015   | Complete final report with recommendation to expand pilot to Emory University leadership  
Call for spring pilot users |
| December 2015   | Expand Pilot for Spring 2016 |
| January – March 2016 | Spring Pilot launched with 59 new faculty participants  
Assessment and evaluation tools complete  
Created weekly videos highlighting Canvas functions using the Canvas Web collaboration tools  
Team met with IT and Instructional Design representatives from across the various professional schools to document experiences, and concerns |
| April 2016      | Complete analysis of data gathered from faculty and students  
Recommendation report complete and presented to IT Governance |
D. Communication & Outreach:

A WordPress site was developed to keep the greater campus community aware of the Canvas pilot progress and events: https://scholarblogs.emory.edu/canvaspilot/. During the spring semester, video tutorials were added weekly to the site, showcasing unique features of Canvas and building a collection of reusable training material. A Canvas to Blackboard comparison tool was also created and posted to the site highlighting differences between the two LMS’s and providing links to online resources on how to use each tool area within Canvas.

The site includes updates about the Canvas pilot project, background information and project events at Emory University.
The University community was invited to live demonstrations of the Canvas LMS twice monthly between September 2015 and April 2016. The “Canvas Drop-in Demo” sessions were held in Woodruff Library from 12-2pm. The Teaching & Learning Technologies group also led Lunch & Learn sessions for faculty at Oxford College regarding Canvas and the pilot project in late September and October 2015, and a Cookies & Canvas event for Oxford students in February 2016. Two student-focused outreach sessions were held on main campus during Wonderful Wednesday, where students gave feedback about Blackboard and their LMS preferences.

E. Training:

Faculty training for fall pilot participants was delivered in late July/early August 2015. Training events were held in December and January for the spring pilot. Pilot faculty were provided three options for Canvas training:

- An online training course that included step-by-step video and handout directions on how to build out their Canvas course,
- A two-day face-to-face session, with each session 3 hours each, and
- An all day, 6-hour face-to-face session.

Each orientation was monitored/facilitated by Teaching & Learning Technologies staff. The online orientation was asynchronous, with no virtual meetings; faculty were able to work through the content of this training course at their own pace (printing online guides and watching video), with content that was available 24/7.

All pilot faculty had access to a blank course, where they could immediately try out the new skills they were learning during training and ultimately build a fully developed pilot course. Faculty responded positively to many Canvas features (such as Syllabus & Scheduler), but had lukewarm reactions to the standard content organization practice of Canvas and the effort needed to transfer existing Blackboard content over.

Emory students were notified through their faculty about participation in the Canvas pilot. Teaching & Learning Technologies staff were available during the first week of classes to give an overview of the pilot and Canvas platform. Many faculty took the lead in getting their students up to speed on Canvas. Faculty also incorporated student support resources from Instructure directly into the pilot courses. Teaching & Learning Technologies staff also developed a student-focused orientation and support site within Canvas for the spring 2016 semester.

F. Pre-Pilot & Midterm Surveys:

The faculty participants were sent a customized link to two electronic surveys (using SurveyMonkey) via email to their university email address, or within their pilot Canvas course by Dr. Dana Bryant, Lead Instructional Technologist, with Teaching & Learning Technologies. Students who were enrolled in a course that piloted the Canvas LMS were sent a customized link to their surveys via Canvas email by the
pilot coordinator, Dr. Bryant. The students were invited to voluntarily participate in the Pre-Pilot and Midterm Survey. Follow-up emails for the Midterm Survey were sent 1 week after to all non-respondents. The faculty response rate for the Midterm Survey in Fall 2015 was 100%; in Spring 2016 was 56%. The student response rate for the Midpoint Survey in Fall 2015 was 28% and 12% in Spring 2016.

The first survey included closed-ended and open-ended questions related to the user’s experiences with Blackboard LMS; the second survey was related to their experience using Canvas, specifically with regard to product intuitiveness and ease of use. Each survey took approximately 20 minutes to complete. No individuals received compensation for participating in the survey. See Appendix 2: Faculty Midterm Survey and Appendix 3: Student Midterm Survey for the entire list of the Canvas survey questions and responses.

Evaluation

A. Survey Data – Faculty Perspectives

Description of Pilot Faculty
Fall 2015 there were 20 faculty participants; in Spring 2016 the numbers jumped to 80. Positive word of mouth from the first semester contributed to the increase, with many faculty inquiring about joining the pilot before the extension to Spring was confirmed. The majority of faculty participants came from Emory College of Arts and Sciences, followed by School of Nursing and School of Public Health.

What is your primary Emory affiliation?

- Candler School of Theology
- Emory College of Arts & Sciences
- Goizueta Business School
- Nell Hodgson School of Nursing
- Oxford College
- Rollins School of Public Health
- Laney Graduate School
- School of Medicine
- School of Law
- Other (please specify)
The majority of pilot faculty reported teaching hybrid courses (a blend of traditional and online instruction), which is indicative of the instructional culture at Emory. However, all instructional methods were represented, as illustrated in the chart below.

It should also be noted that two entirely online programs at Emory - the Rollins School of Public Health Executive MPH (http://www.sph.emory.edu/departments/emph/index.html) and Nell Hodgson School of Nursing Online Prerequisites Courses (http://www.nursing.emory.edu/admission-and-aid/online-prerequisites/index.html) - had faculty/courses that participated in the Canvas pilot.

**Canvas Features & Functionality**
Regardless of course format, the top three Canvas features used by faculty were: Posting announcements, creating assignments, and posting grades (gradebook).
Based on survey comments and feedback to our Educational Analysts, the following Canvas features were also popular with faculty:

- **Roll Call:** With this tool, instructors can keep track of course attendance by taking roll electronically. Instructors can choose to view the tool in a list or grid format and can customize the placement of each student in the seating chart. The tool also creates an assignment in the Gradebook and calculates attendance as a percentage of a student's grade.

  Pilot Faculty Feedback:

  “Roll Call is useful to create seating charts and quickly register attendance by hand, so it’s worth keeping and is a step in the right direction.”

  “I LOVE the attendance mechanism [Roll Call].”

- **Calendar/Scheduler:** This is part of the new Calendar and creates appointment groups (collection of individual appointments) that students can sign up for. For example, you can use Scheduler to: create office hours, schedule TA sessions, and assign presentation times.
Pilot Faculty Feedback:

“Scheduler is awesome. It is precisely what I currently use a third-party paid app for now.”

[What are your favorite things about Canvas?] “The calendar, and the fact that I can submit assignments there directly.”

“The way it automatically puts tests, assignments onto the calendar is great.”

• **Speedgrader:** As an instructor, this tool allows for viewing and grading student assignment submissions in one place using a simple point scale or complex rubric. Canvas accepts a variety of document formats and even URLs as assignment submissions. Some document assignments can be marked up for feedback directly within the submission. You can also provide feedback to your students with text or media comments.

Pilot Faculty Feedback:

“Just looked through assignments [for students] to respond and sign the plagiarism and collaboration policy. It [Speedgrader] was really really easy and quick review and "grading" (checking complete or incomplete). Totally the opposite of my experience reviewing submissions on Blackboard where I really did have to click at least five times to get to each individual submission.”

“I like that I can get all grades for a single student exported with one click - and I can PRINT it for them!”

[What are your favorite things about Canvas?] “The speedgrader with audio and video options. Also, the submission of audio and video assignments.”
Canvas Ease of Use
The Canvas tasks during the pilot rated “very easy” were monitoring course activity and student progress, sending/receiving messages to students, and giving feedback on student work/submissions; the task rated “difficult” was customizing the look and feel/navigation of my course at 27%.
Faculty Support of Canvas Adoption
The Midpoint Survey asked specifically if Emory University should adopt Canvas. Fifty percent (50%) of the faculty respondents in Fall 2015 preferred Canvas and wanted to adopt it; Spring 2016 responses in support of adopting Canvas jumped to 81%.

Fall 2015

| Would you support Emory University adopting Canvas to replace Blackboard? |
|-----------------|-----------------|-----------------|
| Yes             | No              | Undecided       |
| 55.60%          | 33.30%          | 11.10%          |

Spring 2016

| Would you support Emory University adopting Canvas to replace Blackboard? |
|-----------------|-----------------|-----------------|
| Yes             | No              |
| 81.00%          | 19.00%          |
Pilot Faculty Feedback:

“Please please please switch to Canvas as soon as possible. I hate going back to Blackboard for my other courses now.” (Fall 2015)

“It is so much better than Blackboard, please don’t make me go back!” (Fall 2015)

“Canvas is a welcome change. I had basically given up with BB [Blackboard]. Also - our students seem to like and have transitioned well to it!” (Spring 2016)

Comments
We had very engaged faculty participating in the pilot, as demonstrated by level of commitment and survey response rate. Most faculty were not aware of the level of work involved in reworking their course/instructional content for use in Canvas; however, many were pleased with the final result. Faculty would benefit from a comprehensive formal training and outreach effort for a successful Canvas implementation. See Appendix 2: Faculty Mid-term Pilot Survey
B. Survey Data – Student Perspectives

Description of pilot students
The increased interest by faculty in testing Canvas resulted in more pilot courses, which in turn produced a large student participant pool, totaling 1900 in Spring semester. The majority of student participant survey responses came from Emory College of Arts and Sciences, followed by School of Public Health, and Oxford College (which only represented 1.6% of pilot courses).

Canvas Features & Functionality
Students were candid in their assessment of Canvas features. Their feedback collected in the open-ended survey questions can be categorized in the following areas:

- Calendar

Pilot Student Feedback:

“I really like how the assignments are listed together and by date and the calendar view in the corner that shows the highlighted days of when assignments are due.”

“The calendar (all the day’s assignments from each class in one place).”
• **Communications & Notifications**

Pilot Student Feedback:

“I also like that you can message other students in your class through canvas

“To do list on the side of the screen so i can see all upcoming assignments and therefore not miss anything.”

“I enjoy being able to see responses from professors regarding graded assignments. I also appreciate having a usable and intuitive app; Blackboard's app never worked for me. It allows for more collaborations and discussions.”

• **Submitting Assignments & Gradebook features**

Pilot Student Feedback:

“It’s really easy to upload assignments.”

“Ability to resubmit assignment work if necessary.”

“Being able to type in a grade and see how your overall grade would change automatically.”

Pilot students also provided thoughtful, specific suggestions for improvement in Canvas, which included:

“Canvas would be much more tolerable if you could save a draft. I have multiple windows open and I don’t want to create my document at another location, so I can cut and paste later.”

“The timer for quizzes and tests is only at the top of the page, so as you scroll down for questions you cannot see the timer anymore and have to keep scrolling back up to check your time.”

“A calculator”

**Canvas Ease of Use**
The top tasks pilot students rated “easiest” in Canvas were submitting work assignments, exporting/viewing course content, and navigating my course to find things in a logical manner; the tasks rated “difficult” were navigating my course to find things in a logical manner, viewing/using rubrics, and participating in Discussions.
Some preliminary comments about Canvas included:

“I think Canvas is actually more user friendly. I like that documents can be viewed before downloading and it’s faster and better organized.”

“Well organized and user friendly interface.”

“There just seems to be more variety in what you can do, like peer edit.”
Student Support of Canvas Adoption
The Midpoint Survey asked specifically if Emory University should adopt Canvas. Fifty percent (50%) of the student respondents in Fall 2015 preferred Canvas and wanted to adopt it; Spring 2016 responses in support of adopting Canvas rose to 59%.

Fall 2015

Would you support Emory University adopting Canvas to replace Blackboard?

- Yes: 50.90%
- No: 26.40%
- Undecided: 22.60%

Spring 2016

Would you support Emory University adopting Canvas to replace Blackboard?

- Yes: 58.90%
- No: 41.10%
Pilot Student Feedback:

“I like canvas a lot more than Blackboard. Everything is easier to find, and I really like the to do list on the side of the screen.”

“I have used blackboard for years in another setting. I found Canvas to be more intuitive, easier to navigate and made more "sense" to me than blackboard. highly recommend.”

Comments

Our student pilot population had less time (than faculty) to get acclimated to using Canvas since their orientation coincided with the start of classes. Feedback is more mixed from the students’ standpoint; for example, there is both praise AND dislike noted for the Modules pages. While the integrated course Calendar feature was an overall hit, the Discussion feature in Canvas was hard for some to maneuver. Students would benefit from comprehensive and extended training and support for any Canvas implementation. See Appendix 3: Student Mid-term Pilot Survey

C. Functional Support Review

The Educational Analysts, Lead Instructional Technologist, and LMS Admins from Teaching & Learning Technologies formed the primary functional team providing support to pilot participants, while exploring the functionality and technical aspects of Canvas. Training for support staff was provided by Instructure (parent company of Canvas) via webinars in July 2015. After faculty orientation concluded, each Educational Analyst was assigned individual faculty members/courses to provide dedicated support for the duration of the pilot. Pilot faculty used a Discussion Board on the Online Orientation site to ask questions and share solutions during the pilot.

Key Observations

The group was in agreement with the faculty on the positive features offered by Canvas including the dynamic, integrated Calendar and Assignment functions; uniform course navigation design; and quality of Canvas resource materials. Interestingly, some of the Canvas features praised by faculty and cited currently lacking (inline grading/edits and notifications) are already available in Blackboard, but the complexity of the Blackboard interface may have hampered adoption of those tools. This may speak to an edge toward Canvas regarding intuitiveness and ease of use.

Consults during course-building with faculty also revealed some tools such as the Grade Book and Discussion are not as feature-rich as the current LMS. However, the essential LMS features can serve the majority of the users and a simple clean interface can be a plus. There are also external tools that can enhance Canvas functionality that are easy to integrate due to the open LTI framework Canvas fully supports. In the instance of discussion boards, the external discussion board tool Piazza was easily installed and integrated into pilot courses for testing.
It is clear that faculty expectations should not be to recreate the Canvas pilot course as a replica of their current Blackboard course. A different product calls for different course design, especially with regard to content organization (breadth vs. depth). Faculty will definitely need more than one semester to be creative in the environment. While the essential features of Canvas are easy to use, the Teaching & Learning Technologies functional team recognizes faculty need more training and time to explore instructional design best practices that are specific to Canvas.

**Feature Comparison**

The main distinctions noted by the Functional Team are (1) Modules & Pages used for course design (vs. folders in Blackboard) and (2) no built-in plagiarism detection tool for Canvas. Blackboard includes an integrated plagiarism-detection tool, whereas Canvas supports third-party plagiarism services via the LTI standard. After some research, we found other institutions have documented other feature differences and incorporated tips for navigating these differences into their training and outreach initiatives while transitioning to Canvas. With regard to an anti-plagiarism tool, Canvas has recently partnered with Vericite and is rolling out a native version of their anti-plagiarism tool that in testing is similar in functionality to Blackboard’s SafeAssign. This is a separate license agreement and will need to be acquired for Emory faculty.

Many faculty and support staff also expressed an interest in seeing courses that exemplified best practices for the use of Canvas in instruction, as well as more details on how Blackboard features compare and translate into Canvas. Providing sample course layouts and templates, as well as support tools for transitioning from one LMS to another, will be an important component of any implementation plan.

Educational Analysts will continue to look at the qualitative feedback for issues that should be addressed with Canvas training and use as a guide to improve the user experience as part of any proposed implementation.

**Accessibility**

Canvas states it was designed with accessibility in mind, with special attention to ensuring all Canvas courses screen-readable, as well as limiting customizations of colors and schemes so that content is accessible for all users.

As of May 2015, WebAIM.org, a third party authority in web accessibility, certifies Canvas to be substantially conformant with Level A and Level AA of the Web Content Accessibility Guidelines version 2.0. Canvas/Instructure provides a Voluntary Product Accessibility Template, or VPAT, for LMS administrators and instructional designers to evaluate Canvas’ conformance with the accessibility standards under Section 508 of the Rehabilitation Act and the Act WCAG 2.0 AA Standards.

See [https://community.canvaslms.com/docs/DOC-2061](https://community.canvaslms.com/docs/DOC-2061) for more info on accessibility within the Canvas LMS platform.
Instructure Support
Instructure (parent company of Canvas) provided Premium Tier 1 24/7 User Support during this pilot. All courses featured the following Help feature embedded within:

The Premium Tier 1 User Support provides end-users with an Instructure phone number for direct support from the vendor, 24 hours a day, along with enhanced chat and email support available around the clock. Teaching & Learning Technologies provided Instructure with guidance/example responses for any inquiries that fell outside of the scope of Instructure support so that the inquiry would be routed back to Emory for appropriate resolution.

Instructure Community
Instructure’s product development process is focused on a “student-centered” design methodology that integrates both usage data and community feedback into ongoing iterations and future direction of the platform. Because of the hosted nature of Canvas, Instructure is able to react to usage trends to better anticipate student and faculty needs and priorities than our current on-premises Blackboard product, which has very long, monolithic update cycles. Upcoming product features are directly informed by feature requests in the Canvas community, and the company actively and publicly engages with
customers in that forum. Likewise, customers have numerous “birds of a feather” groups within the community to share solutions, scripts, and best practice uses of the application.

Support Survey Responses

Pilot Faculty Feedback

“They online (chat) support totally rocks! Every single one of the (multiple) times that I have had to open a chat to ask for help figuring something out they have been friendly and helpful. Sometimes they were able to just point me towards an online help article and other times we have worked problems out together online but it was always a really positive experience; which is not always the case in the computer IT universe.”

“I would highly encourage colleagues to just get on ChatLive with Canvas – they are amazing beyond words!!! It is far easier for everyone as Canvas people respond even at 2am on Sundays!! I have used hours of help so far, and without them I would not have been ready yesterday [1st day of classes]”

Aggregate Data shows a majority of faculty (38%) used search of guides (available to any Canvas customer), but the second largest group (21%) used live chat (part of Tier 1 support). Many faculty expressed a need for this for course building and questions outside of regular business hours—when faculty are usually building courses. 23% of faculty stated they did not use any support at all, which may speak to ease of use and the relatively short learning curve for Canvas.
Aggregate Data shows the majority of students did not need to use support resources (61%). Students tend to be familiar with most learning management systems, some reporting having used Canvas before in high school or at other institutions. A fair number were not aware that online support was available (29%), showing a need to improve messaging to let students know this resources is available.

Organizations
For historical reasons, a large number of organizations and non-course content has been hosted in Blackboard at Emory. With changes in central IT services and the addition of various cloud offerings over the past few years, many organizations looking for online collaboration tools have more options than were previously available to the campus. While Canvas does have a “Groups” feature, it’s primary function is in support of academic course content. Organizations that simply need access-restricted document sharing tools should be directed to other services designed to support online collaboration that are now easily available (Box, Office 365 Sites, OrgSync, etc.). Those who may benefit from course-like features found within an LMS (ex. discussion boards) can be accommodated within the Canvas platform as a Canvas Group.
D. Technical Review

Architecture
Canvas is a Software as a Service (SaaS) application hosted on Amazon Web Services. This architecture provides scalability, no downtime for maintenance, and permanent retention of data. Each user licensed in Canvas receives 0.5 GB of data storage aggregated globally.

Canvas offers its institutions three instances: Production, Test, and Beta. The Beta instance provides early previews of upcoming enhancements and features to Canvas before they are released to Test and Production. While it is advantageous to see these early previews, Instructure has a strict refresh schedule that cannot be altered or controlled by any institution: Beta is refreshed weekly and Test is refreshed every 3 weeks.

Application Administration and Customization
Canvas is administered via either the Web GUI or by scripting with the Web Services APIs. Institutional administrators are given access to the system at sub-administrator level with access to a limited set of tabs and built-in configuration options. Though this frees up the administrators to pursue other avenues of external integrations (listed in following subsection) and scripting, it presents limitations related to permissions, built-in features, and customization.

While the GUI administration interface is limited in customization options, institutional administrators can add a global JavaScript and CSS URL. This adds a great level of customization in what our users see and what they have access to within their courses. At present, Canvas relies heavily on CSS to allow system administrators to customize aspects of the permissions mechanism not directly supported by the native role options. This dependence on hiding functions with CSS rather than truly disabling them will require additional scrutiny on the part of system administrators.

Integrations
SIS: Integration using feed files within Canvas appears to be very similar to Blackboard's process, allowing integration between Canvas and Peoplesoft with minimal effort. However, due to the way Canvas handles overall integration, including lack of logging, a local server to manage integration files and automation would be needed. Canvas does not support the industry standard IMS LIS, preventing real time 'out of the box' integration with Peoplesoft, though it is on their roadmap.

LTI: Instructure provides myriad third party applications through their EduAppCenter that can be installed directly into Canvas via standard LTI. During the set-up of our environment for the pilot, we utilized the EduAppCenter for applications such as YouTube, Box, and Respondus Lockdown Browser successfully. Integrations currently in our Blackboard production environment were also successfully tested, including ECHO and Ares Course Reserves. Some policy considerations around individual faculty creating their own LTI integrations, as well as managing user expectations around LTI integrations they might request, will be needed for full production implementation.
API: Canvas offers a rich, well-documented set of REST-based Web services APIs that allow for automation and integrations throughout multiple layers of the software stack. Canvas API scripts are invoked with an application access key that must be carefully protected, as the access key provides any access to Canvas administration afforded to the key’s creator. Nearly any non-LTI Canvas function accessible through the GUI can be accessed or modified with the Web services APIs, and they are critical to learning to automate and optimize use of the Canvas infrastructure. Blackboard will provide its own set of REST-based APIs in the SaaS-based Ultra environment but, as of this writing, the list of function calls is minimal and restricted to user and course creation and modification.

Security
Authentication: During our set-up phase for the pilot, we were able to implement Shibboleth successfully with Canvas so that all users involved in the pilot could use their Emory login credentials.

Audits: Canvas has provided yearly security audits of its application and environment at its expense.

Logging: Provided through the application, though logging of Canvas admin access is minimal.

Data
As noted above, Canvas stores customer data permanently. This can be advantageous for recovery options, but it also presents an issue related to data retention policies. Data can be permanently deleted through support requests to Canvas’ help desk, but Instructure’s expectation is that most institutions will maintain their data indefinitely.

Central to our technical review is access to our data in the Canvas database. Canvas has made several different data options available for users, including free access to data downloads every 24 hours. The data downloads have to be loaded into a local database to be processed and viewed. The database schema is documented in the Canvas Data Portal. For institutions that don’t want to run a local database, Instructure offers an optional hosted database in the Amazon Web Services space using Amazon’s RedShift service.

Reliability
Despite Canvas’ Amazon Web Services underpinnings, we have seen periodic, brief issues show up both in actual practice as well as documented on the Canvas status page (http://status.instructure.com/history). During the pilot, Canvas has experienced between three and twelve service-impacting issues during the course of a given month, with issues ranging from degraded performance to regional “white screen” errors for certain customers. One of the fundamental realities of moving to a SaaS environment is that the performance of a service becomes entirely vendor-dependent, versus an on-premises implementation where local staff can have control over the hardware and software stack. In most cases, though, issues observed on the status page have not resulted in user-reported problems on our campus and Canvas has responded quickly and transparently with resolution.
Summary & Recommendation

In summary, key findings from the 2015-2016 Canvas Pilot at Emory include: the system is overall easy to use; transfer of Blackboard course content can be challenging depending on complexity; the user interface is simple and modern, but the lower degree of customization can be interpreted as positive or negative; some of the new features are very well-liked; performance through the hosted service was generally reliable.

This pilot project provided us additional insights on features offered and the actual experience of using Canvas from faculty and students. While the feedback and experiences are largely positive, there are certain programs and groups that expressed concerns with functionality of Canvas during the pilot. This can possibly be attributed to the following factors: limited personalization of Canvas course navigation; users’ overall resistance to change; faculty not having enough time to use Canvas differently than their current Blackboard practice(s); students needing more initial orientation to the Canvas platform; and general frustration with using two learning management systems during a semester.

Even with these concerns, 81 percent of the faculty participating in the spring pilot stated they support a move to Canvas. Features and functions that were most valued include the Calendar, Roll Call, Scheduler, SpeedGrader and the intuitive and modern nature of the interface, most features currently not available in Blackboard. Pilot users also responded positively to Instructure’s 24/7 Tier 1 support. Canvas does not provide a one-to-one replacement for every feature and tool found in Blackboard. To that point, many faculty reported that the combination of Teaching & Learning Technologies and Instructure support, along with having extended time (1-2 semesters) using Canvas, proved critical to revising course instructional design to compliment Canvas’ unique environment and functionality.

From a technical perspective, the pilot showed that the native cloud architecture provides a simpler integration with external tool providers, as well as streamlined updates with no system downtime and continuous product refinements. There is also significant cost savings from migrating the LMS service to a native cloud-hosted platform versus maintaining on-campus servers and supporting infrastructure. The Canvas open platform allows LMS administrators to focus more on testing, installation, and support of LTI/API enhancements to the learning management environment, instead of a focus on application administration, legacy tools, and recurring break-fix that is inherent in the current Blackboard self-hosted model.

Blackboard’s existing SaaS model is another option, but is, in our opinion, a riskier strategic direction. The company has yet to articulate a consistent and clear strategy for the future of its Ultra product, and there is a great deal of skepticism among those who track the learning management system product space that Blackboard, Inc. can completely rewrite and reinvent their current platform while maintaining the few technology advantages currently seen with that product. Either moving to Canvas or staying the course with Blackboard will involve significant change management challenges for our faculty and students, but Instructure has made a more credible and articulate case with Canvas and the majority of our peer institutions agree.
Our pilot research shows that Canvas directly addresses the concerns of dissatisfaction with Blackboard expressed by faculty and students over the years in ongoing surveys. A move to Canvas also brings us in line with the majority of our peers and with the emerging industry standard LMS platform. A migration to a new learning management system will not be trivial, but there are clear long-term benefits to the Emory community in ease of use, system reliability, and expanded functionality.

Based on pilot feedback and a functional and technical review, we propose the following recommendations:

- **Adopt Canvas as the campus Learning Management System**, with full campus licensing starting June 1, 2016 to provide service continuity for pilot faculty teaching summer courses and four full semesters for migration. Blackboard will continue to be licensed and supported for the 2016-2017 academic year to allow sufficient time for training on the Canvas platform and course migration. Blackboard licensing would not be renewed September 1, 2017.

- **Develop and communicate a comprehensive LMS transition plan**, detailing technical and functional tasks required to move to full production; outlining faculty, student, and instructional staff support options for migration; coordinating effective communication to the campus about implementation timelines; and fully documenting and promoting Canvas training plans for the 2016-2017 migration period.

- **Create and document a best practices course gallery**, with starter course templates and pages, to provide examples and ready-to-use course shells modeling exemplary course design within the Canvas platform and encouraging both efficient and effective online instructional content creation and delivery.

- **Develop processes and practices** around the evaluation and adoption of LTI tools and API connectors that extend the Canvas product, leveraging the native cloud architecture and standards-based design to provide new functionality and automation.

- **Secure Instructure Tier 1 support to provide 24/7 support** for faculty and students for the duration of the transition/implementation. This will complement and expand on existing campus instructional support resources for a more seamless and expedited migration.

- **Outline options and best practices for organizations (non-course) use of Canvas**, with guides and links to other campus solutions that may provide more appropriate and useful functionality for online collaborative work (Box, Office 365 Sites, OrgSync, Canvas Groups, etc.).
Appendices

Appendix 1: Pilot Faculty and Classes
Appendix 2: Faculty Midterm Survey Canvas Pilot
Appendix 3: Student Midterm Survey Canvas Pilot