

Canvas LMS Evaluation, Spring and Summer 2013 Report and Recommendations

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Executive Summary

This report summarizes the results of an evaluation of Instructure's Canvas Learning Management System (LMS) conducted over the Spring and Summer 2013 terms and includes key points to validate the selection decision of Canvas as UC Berkeley's LMS replacement of bSpace. The eight-month formal evaluation focused on Canvas' ability to support faculty and student use cases identified through a requirements gathering process that began in 2012 and continued through the pilot in Summer 2013.

Key Findings:

- Canvas offers all of the major functionality currently in bSpace and provides substantial improvements by providing tools that enable faculty to organize and present content in a more cohesive way. In particular, it provides extensive assessment and feedback tools.
- The promise of Canvas' interoperability tools and web services was validated during the pilot and offers tremendous flexibility in integrating third party and locally developed tools and systems.
- There are limitations around the administration of and communications in large course administration with multiple sections.

Key Recommendations:

- Berkeley should move forward with licensing and implementing Canvas as its LMS, leveraging Instructure's hosting and support services.
- The team should elicit input from the Project Steering Committee and the Deans and Chairs regarding developing a scalable implementation and training plan that supports the needs of faculty and students during the transition from bSpace to the new system.
- The project team should continue to engage the vendor, Instructure, in eliciting feature enhancements and accessibility improvements.

Introduction

Educational Technology Services (ETS) began examining Canvas as a possible bSpace replacement in the Summer of 2012 and initiated a formal evaluation in January 2013. The primary goal of the initial evaluation was to understand how well Canvas would meet the needs of the wide range of users and use cases across campus. This evaluation included confirming campus functional and technical requirements, researching the LMS market to understand which of the available products and platforms could meet campus' needs, and conducting interviews with peer institutions who had recently transitioned or were in the process of transitioning to a new LMS. Instructure's Canvas was selected for a pilot based on that research.

Scope of evaluation

In Spring 2013, ETS initiated a two semester pilot and review process, with the purpose of validating the decision to select Canvas for the campus. The pilot evaluation criteria drew from needs expressed by faculty over the past five years and from pedagogical best practices, while also utilizing ETS's establish experience supporting bSpace to identify support and technical needs. Specifically, the pilot evaluation focused on these three areas:

1. LMS features and functionality
2. LMS accessibility for disabled users
3. Technical features, with an emphasis on extensibility and interoperability

Vendor Strength

It is important to note that Instructure's strength and stability, which emerged clearly in the market research in 2012, were also important factors in the initial selection of Canvas for a pilot. Founded in 2008, Instructure has developed a vast customer list that spans higher education, K-12, and corporate sectors. Within higher education, over 400 colleges and universities currently have implemented Canvas. Many of Berkeley's peers have also implemented Canvas or are actively piloting the platform. Those peers include:

- University of Pennsylvania
- University of Texas at Austin
- University of Washington
- University of Maryland
- Indiana University (in pilot)

UC Berkeley Extension and UC Online Education have also recently decided to implement Canvas after completing their own due diligence into the LMS market.

Summer Session Course Pilot

Evaluation Methods

- ETS partnered with ten (10) to utilize Canvas in support of Summer Session courses. Instructors were recruited as their course formats and pedagogical approaches represented a broad set of use cases. They came from the following departments:
 - History of Art (3)
 - College of Chemistry (1)
 - Graduated School of Education (1)
 - Berkeley Law (1)
 - School of Public Health (Joint Master's Program with UCSF) (3)
 - Sociology Department (1)
- In addition, instructors of Chemistry 1A began working with ETS in February 2013, utilizing Canvas as the platform to launch their course redesign.
- Instructor feedback was collected during training sessions and consultations over the course of the summer pilot, in support tickets, and during end-of-course formal interviews.
- Student feedback was collected through a student survey delivered at the conclusion of the summer courses. Additional student data collection is still in the process of being collected.

Results of Summer Session course pilot

Faculty, as well as students, who participated in the summer pilot were satisfied with Canvas, with the students showing higher than average satisfaction with some specific tools.

Instructor Satisfaction

In consultations and end-of-course interviews, faculty cited the following tools and features as Canvas' key strengths:

- Navigation was "easy and intuitive."
- Upload of images is faster and simpler than in other systems.
- Assignments tool was "super easy."
- Quiz tool made the creation of formative, informal assessments much easier.
- Modules tool made organizing course content much faster.

Impact on Instructors' Teaching

- One instructor found the Analytics tool "interesting." She said because of the way she structured her assignments she didn't find the analytics tool useful for tracking student progress per se, but it did make her re-think how she was teaching her class as she could see where students spend the most or not enough time, where they did well, and where she should review content.
- Another instructor used the Quiz tool for formative assessment, citing how easy it was to use. He believes this could encourage his school's adoption of more formative

assessments.

Student Satisfaction

A standard student survey was delivered at the conclusion of the summer courses.

The first questions focused on satisfaction with Canvas. The vast majority of students were “satisfied” or “very satisfied” with Canvas.

Students also ranked several features and tasks for their ease of use and/or completion, using a rating scale of 1-5 (1 being not easy and 5 being very easy). These features included navigation, checking the course schedule for due dates, accessing course materials, submitting assignments, taking quizzes, collaborating, participating in online discussions, checking grades and using Google Apps. Result: Ratings spanned 3-5, with no features receiving below a 3 except for using Google Apps within Canvas, which received a 1.

Impact on Student Learning

The survey also addressed the perceived value that Canvas had among students.

Students were asked whether they agreed with the statement: “Canvas has enhanced my class experience.” Half the class agreed, a third strongly agreed, and a few were neutral.

Finally, students were asked whether they agreed with the following statement: “Canvas has helped me to learn the course content more effectively.” One third of respondents were neutral, one third agreed and the last third agreed strongly.

Berkeley Law conducted its own survey following the course. The question set was somewhat different than the survey ETS conducted, but questions regarding student satisfaction with and perceived value of Canvas were useful in the ETS evaluation process. Overall these students reported:

- The structure of the content in their course was “easy to follow.”
- Video content in the course was helpful in their learning.
- Online discussion forums were helpful their learning.

Challenges

In post-pilot interviews, faculty spoke of some of the challenges they encountered while using Canvas. These include:

- Three-week releases: Instructure releases a new version of Canvas every three weeks. As a result, one instructor did not always know when features changed.
- Content Editor: Two faculty stated explicitly that the rich-text editor needed improvement as they found formatting content more cumbersome than expected.
- Analytics: Faculty expressed concern that students were not informed of the Analytics tool and how instructors planned to use them. Faculty recommended we educate students on the ways Analytics can be used to improve student interaction with course content and performance.

Functional Gap Analysis

ETS Instructional Designers completed an analysis of Canvas' ability to meet our functional requirements in several ways. That analysis included the following activities:

- In-depth review of functional requirements and in the creation of multiple demo sites (for different use cases)
- Use of Canvas for teaching a Spring semester course on New Media, focusing on group collaboration and communication, as well as the ability to integrate third-party tools
- Collaboration with the Chemistry department to begin a curricular re-design of Chemistry 1A, focusing on assessment and grading features and the use of multimedia tools (e.g., video, audio, annotation) for teaching.
- Testing the following areas in depth:
 - System performance in large classes
 - Functionality of groups and sections and how they interface with other tools and features in Canvas
 - Large course administration and management, especially communication and grading tools

Strengths

In addition to meeting our campus' current needs, Canvas brings new functionality (or notable improvement over existing functionality) that will support improved and enhanced teaching and learning experiences for instructors and students, respectively. These functional areas include:

- **Organizational features that support strong pedagogy.** With the syllabus and modules, instructors can encourage and facilitate the organization of course content and activities. If/when used to their fullest, the syllabus and modules tools will demonstrate good communication (between students and instructors) and will educate students about the progression of their learning.
- **Assessment and feedback.** Canvas' suite of assessment, grading and commenting tools provide many ways for instructors to track students' progress (e.g. Analytics) and to give feedback. These tools include Assignments, Gradebook, SpeedGrader, and Rubrics.
- **Integration with external tools.** The ability for instructors to connect to their own selected tools via Canvas' App Center will foster more innovation and enable customization for specific teaching needs. Faculty for Chemistry 1A, for example, have imported Google docs spreadsheet to be used as a mechanism for providing automated feedback.
- **Sub-accounts allow for delegation of administrative privileges.** Canvas allows a campus' principal account to create "sub-accounts." Sub-accounts, already in place for the Law School, allow for defined groups such as departments, programs or professional schools to organize their courses and provide instructors with requirements such as special integrations or roles that the main campus might not need to implement. This functionality renders the Canvas platform flexible and responsive to programmatic needs of the campus.

Challenges

In their in-depth work, Instructional Designs also identified challenges with using Canvas.

Large course administration: The model for organizing large courses in Canvas presents challenges as some tools do not work well at the level of the course section. Groups functionality is an option, but Groups in Canvas are designed primarily as independent student groups; they are not well suited to a nested model where some course communications and activities are generalized while others are intended for a group within a site. Thus using Canvas for very large course will require a new approach to course organization.

Course communications: The following challenges with Canvas' communication tools are not showstoppers but will require additional effort of ETS' Training & Support team until Canvas improves this functionality within the suite.

- While Canvas has an email-like tool, chat, and a discussion forum tool, the ability to conduct cascaded class communications are limited. If sections cannot be established, it will be difficult for instructors to streamline communications which could impede their efficiency in a very large class.
- Canvas' Collaborations tool, which is its own instance of the open source text editor Etherpad, is slow and awkward to use.

Accessibility Review

ETS' User Experience designers and Canvas project technical lead collaborated with IS&T's accessibility specialists to review the system, in the role of both instructor and student, with detailed test protocols. The accessibility specialists assessed the ability and ease with which students and instructors could perform tasks in Canvas using a screen reader (for visually impaired users) and a keyboard (for physically disabled users), as well as users with cognitive disabilities. Each issue that was identified was ranked according to its severity (the extent to which it hindered the user's ability to complete the task) and impact (the extent to which the task itself was encountered in typical LMS usage).

Canvas has a track record of incorporating accessibility for all users into their application. In 2010, Canvas was certified by the National Federation of the Blind as "equally accessible to blind and sighted users" [<https://nfb.org/node/1037>].

Our findings indicate that a student using a screen reader and/or keyboard is able to complete all core tasks that would be expected of a student in the LMS. However, several core tasks did pose significant challenges for screenreader or keyboard-only users, due to inadequate provisions for accessibility in the application. A few features were not accessible at all, however this was limited to features that would not be required by a student participating in a course (e.g., "flag" a quiz question to review later, or mark a discussion as "unread").

Instructure has begun working with a third party to conduct its own accessibility evaluation, and

its product development team is in the process of resolving those issues that have been identified. They are committed to resolving key issues by the end of 2013, as well as establishing guidelines and best practices for maintaining accessibility in future enhancements.

ETS will continue to monitor and address accessibility concerns as follows:

- As those accessibility issues we identified are resolved, we will validate they are resolved and meet campus standards.
- In Spring 2014, ETS will conduct another assessment in collaboration with Web Access to evaluate the effectiveness of Canvas' efforts to resolve accessibility issues.
- Ongoing period review of new features and enhancements to ensure Canvas continues to meet the campus accessibility standards.

Technical Review

Integration with Campus Enterprise Systems

The development and operational teams within ETS need to be able to efficiently integrate Canvas with the existing campus data systems that constitute our Student Information System (SIS) and need to be able to adapt these integrations as a new SIS is introduced to campus in the next few years. During the evaluation period ETS analysts and developers built phase 1 & phase 2 integrations with the SIS to support the Summer 2013 and Fall 2013 pilots.

Local Customization of Canvas Experiences and Workflows

ETS needs to be able to respond to campus requirements for custom workflows and user experiences that are specific to the Berkeley campus.

During the evaluation period ETS analysts and developers responded to identified functional gaps in the LMS and, where appropriate, responded with local customizations to the Canvas experience. These customizations include some or all of the following:

- Local CSS & Javascript customizations including skinning/branding
- Learning Tools Interoperability (LTI) integrations with locally built and/or hosted external tools
- Leverage Canvas APIs to build or customize workflows within Canvas
- Utilize Canvas' set of APIs to expose LMS data within the CalCentral web application to provide a unified student experience

Integration with Campus Enterprise Systems

In its exploration around integration with the campus' SIS systems, ETS focused on the ability to load course, section, and roster data into the Canvas LMS for courses participating in the Summer pilot and update section memberships via a daily update script. Phase 1 integration increased the number of section enrollments by a factor of 20 and differentiated student enrollments to include waitlisted students.

Local Customization of Canvas Experiences and Workflows

In addition to waitlisted students, official student photos, and instructor access to student ID

numbers within Canvas, there were gaps that were identified for resolution during Phase 1 of the project.

- **Official Student Photos for Faculty Use**
bSpace offers Faculty the ability to see official student photos. This ability is not native to Canvas. The implementation team was able to design and develop a custom LTI solution in Canvas over a four-week period that represents an improved user experience in terms of searching and filtering of student photos than its bSpace counterpart.
- **Student ID Numbers**
By leveraging the Canvas user API, the development team was able to modify our existing integration code to support Berkeley's specific requirements to use Student ID within Canvas for students and LDAP (Calnet) UID for all faculty and staff. This task was completed in less than two weeks.

Instructure's responsiveness to team and developer issues

Instructure has provided four key avenues for Berkeley's team, and its developers in particular, to learn and work with the system:

1. **Open Source Software** - Because Canvas is an open source project, the ETS development team has been able to react quickly and confidently to requirements and designs with a clear understanding of the available software hooks and potential pitfalls.
2. **Rich, well documented APIs** - Canvas' APIs have allowed our development team to work rapidly to build custom Student Information Systems (SIS) integrations in addition to delivering critical LMS information in CalCentral in order to deliver a compelling unified experience for students and instructors.
3. **Direct Access to Instructure development teams** - Via IRC chat channels and online discussion forums, Berkeley analysts and developers have been able to gain key insights into Canvas capabilities. The use of the chat channel provided timely feedback for questions small to large and helped the team maintain an aggressive development schedule.
4. **Account & Implementation Management** - Project leads conference with Instructure Account & Implementation managers on a weekly basis and are in regular email contact in between calls. Account managers have been able to advise ETS and, in many cases, identify expert resources at Instructure to follow up with concerns or aid in development efforts.

Final Recommendations

Recommendation 1: Adopt Canvas as Berkeley's LMS platform.

Berkeley has begun the process of defining the transition from a pilot to a campus wide implementation. The current pilot contract extends through December 31, 2013. We expect to transition to an enterprise-level implementation in January 2014.

Recommendation 2: Continue to use Instructure’s cloud hosting service.

In the pilots, ETS has leveraged Instructure’s cloud offering rather than run the Canvas software on local servers. This relatively new model of hosting for the Berkeley campus has proven beneficial in many ways: it has allowed for quick scalability without an impact to hosting; it automates the adoption of Canvas’ every-3-week releases; and it frees up ETS’ development, operations and support teams from having to manage product maintenance and user acceptance testing.

Recommendation 3: Plan and implement a phased, two-year rollout of the Canvas LMS.

Because our pilot was limited in scope, we were not able to test the usefulness of the Canvas LMS across all departments and disciplines. Therefore implementation will include continued collection by ETS of user feedback, support analytics, and focus groups to inform subsequent phases.

Recommendation 4: Submit a list of features for Canvas to improve upon or upgrade.

ETS will address with Instructure the need to affect the Canvas roadmap so as to ensure that any absent functionality be available to all users as quickly as possible. The ETS team discussed several feature improvements, from which a filtered list of “must-have” features were derived. These features were viewed as enhancements that would serve to improve the platform’s flexibility, ease of use, and adoption.

Recommendation 5: Submit a list of critical accessibility issues to Instructure and obtain assurance that these issues will be incorporated into their roadmap.

Recommendation 6: Develop a training and communication plan that addresses any feature gaps and supports the change management efforts in new user adoption. ETS will address the challenges above through training, communication, and UC Berkeley specific documentation to ensure an understanding of the Canvas platform and the assumptions its built upon.

Recommendation 7: Partner with UC Online and UC Extension to leverage our common platform for the good of the University. As both UC Online and UC Extension have also recently selected Canvas as their LMS, ETS will discuss with our partners options for developing content once and delivering it in multiple contexts or formats. Additionally, the support teams at these organizations should collaborate on the creation of local documentation, assembling user groups, and sharing best practices.