

San José State University

# LMS Advisory Committee

## Final Report

May 14, 2012



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## EXECUTIVE SUMMARY

The Learning Management System Advisory Committee recommends that SJSU adopt the Canvas LMS with Instructure as the host. An open-source LMS, Canvas provides an innovative platform that enhances students' learning experience, facilitates creative teaching strategies, fosters an accessible and user-friendly classroom environment, and offers a sustainable avenue for online teaching and learning.

## MEETING FACULTY AND STUDENT NEEDS

In our tests and evaluations of four LMSs, Blackboard, Canvas, Desire2Learn, and Moodle, Canvas stood out as best meeting the needs of faculty and students. Unlike the other LMSs, Canvas is native cloud technology - networked, user-driven, and customizable. Interviews and survey data from campuses using Canvas reveal that faculty appreciate Canvas's sophisticated simplicity; students appreciate the intuitive interface that reflects their common online experiences with sites such as Facebook and Google; administrators appreciate Instructure's careful attention and responsiveness to customers' feedback and needs. Our tests found that Canvas is the most accessible of the four LMSs. In addition, the ePortfolio function—built into the LMS and not an additional cost—offers a rich array of options in an easy-to-use format. Finally, Canvas's mobile app—also part of the Canvas LMS and not an added cost—allows faculty and students to access their classes from their tablets and smartphones.

## SUSTAINABILITY

Based on a comparative analysis, the costs needed to run Blackboard, Canvas, Desire2Learn, and Moodle were about the same. Although committee members recognize there will be costs to faculty in terms of time to migrate courses and learn the new system, in the long-term, Canvas will be a huge time-saver. For example, faculty (and students) can record and upload video on the fly with three clicks—no more recording, uploading to YouTube, and embedding a link. With Canvas, users record, save, and that's it.

The growth of Instructure's market share has been robust in both the public and private sector; over 160 institutions adopted Canvas including U of Texas Austin (38,000 Full-time Equivalent Students), Auburn U (30,000 FTE), Bowling Green State U (20,000 FTE) and New Mexico State U (24,000 FTE).

## CONTINUITY

Yes, Canvas will be another change in LMSs for SJSU. The transition to Canvas will cost everyone involved time. However, the system's intuitiveness will make the transition less time intensive. The help feature and step-by-step guide as well as its flexibility make Canvas a good fit for novice and expert users alike. In our trials, imports of current D2L classes to Canvas went fairly smoothly. In addition, Instructure worked closely with committee members to identify solutions for migration bugs. Moreover, we will have the option of batch migration, in which a large number of classes are moved from D2L to Canvas.

Canvas is built on Ruby on Rails, the most up-to-date programming language of the four LMSs. The technology underlying Canvas will allow SJSU to make a long-term commitment to the LMS. Because

Canvas is an open-source LMS, it integrates easily with other software, such as Google Docs and Big Blue Button (web conferencing). In addition, because the code is not proprietary, SJSU will have an exit strategy if our partnership with Instructure ends. That is, the source code is freely available, so we will be able to move our classes to another hosting model if necessary. Finally, as a cloud-based LMS, Canvas is updated regularly, which means problems are fixed quickly. Moreover, server space expands as needed, so access to Canvas is consistently fast. The cloud-based technology also allows for scalability—Canvas will be able to meet SJSU’s growing demand for online classroom environments.

## INTRODUCTION

This document describes the work of the Learning Management System (LMS) Advisory Committee for San José State University (SJSU) during the 2012 spring semester.

The move to evaluate SJSU's LMS was initiated by Provost Ellen Junn. Initially, this investigation was motivated by concerns with cost since the university faces unprecedented funding cuts. In February, the Provost extended invitations to participate in the committee based on expressions of interest and nominations. All who expressed interest in participating were invited to do so. The first committee meeting was held on March 8 and work continued through early May culminating in this final report and a presentation to the campus on May 14.

San José State University currently uses Desire2Learn (D2L) as its LMS. D2L has been in use since being fully implemented in 2010 after the 2009 recommendation of the campus LMS+ Committee. The 2011-2012 academic year concludes the initial three-year contract between D2L and SJSU.

Prior to adopting D2L, SJSU has used the following Learning Management Systems:

1997-2001 Convene  
2001-2004 WebCT / Blackboard (SLIS) / eWeb University (OT)  
2004-2008 WebCT / Blackboard (SLIS)  
2008-2010 Blackboard CE 6&8 / Angel (SLIS)  
2010-2012 Desire2Learn / (SLIS began using D2L in 2011)

The Provost's charge to the committee included the following points:

- The LMS must meet the needs of students and faculty
- It must be sustainable (cost)
- It must provide continuity for the future (maximum flexibility and stronger sense of stability) and the disruption resulting from change must be minimized.

## PROCESS

The committee worked through several steps to form a recommendation. The steps include:

### **1) Organize into groups based on aspects of the charge**

Three sub-committees were formed to correspond with aspects of the Provost's charge:

- Group 1: Needs Assessment
- Group 2: Cost Comparison
- Group 3: Exploring LMS Options

### **2) Identify and articulate a concise statement of the question to be addressed**

The committee adopted the following as the concise statement of the question to guide all work:

What is a learning management system that will enhance learning, foster innovation, provide access, and guarantee sustainability for SJSU faculty and students now and in the future?

### **3) Conduct surveys to determine the needs of students and faculty**

Surveys were conducted of students and faculty to determine their needs. Go to the Campus Input section of this report for further detail.

### **4) Examine total costs of ownership**

The costs associated with an LMS selection include both the “hard costs” of licensing and hosting as well as the “soft costs” involved in migration, training, and staffing. Detailed analysis can be found in the LMS Cost Evaluation section.

### **5) Examine features of each system**

Sandboxes and resources were made available to committee members for each of the systems under review: Blackboard v 9.1, Canvas hosted by Instructure, D2L (including v. 10), and Moodle v. 2. A rubric to assess LMS features was developed and each system was evaluated by a team of committee members.

### **6) Consult with LMS experts**

LMS consultant Phil Hill of Delta Initiative was contracted to provide input. CSU LMS leaders Kathy Fernandes and Andrew Roderick discussed options with the committee.

### **7) Host vendor/partner campus visits and demonstrations**

Representatives from Blackboard, Canvas, and Desire2Learn conducted product demonstrations. Administrators and faculty from CSU Fullerton visited the campus and met with the committee to discuss their implementation of Moodle and a possible partnership with SJSU.

### **8) Conduct reference checks**

Calls were made to a variety of institutions currently using the systems under review to evaluate satisfaction with the technology and the vendor.

### **9) Provide recommendation**

At the conclusion of the process, the committee members did not achieve consensus on their final recommendation. A majority recommend Canvas hosted by Instructure as an LMS that will meet the elements of the Provost’s charge with a minority recommending D2L as the preferable solution.

The committee meetings and communications were conducted both on-site as well as online. Meetings were available via Elluminate, Collaborate, or WebEx and recordings were made for reference by those who could not attend or who wished to review the discussion. Committee materials were organized on a wiki set up in PBWorks with access restricted to committee members. The wiki provided a forum for comments and collaborative creation of documentation. Email communications were facilitated with a Google group.

## PARTICIPANTS

### **Faculty (\*co-chairs):**

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### **Advisors:**

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Ruth Huard

### **Administrative Support:**

Jessica Gonzalez



## NEEDS ASSESSMENT

In order to make a sound recommendation to the Provost regarding the adoption of an LMS, it was important to consider the perspectives of the prospective users—that is SJSU faculty and students. The Needs Assessment working group began its work with the following considerations in mind:

1. To the degree that using an LMS in one's teaching enhances students' learning outcomes, it would be useful to take this opportunity to better understand why roughly half of the faculty at SJSU do not, at present, use the "official" campus LMS (D2L).
2. To the degree that faculty who do use an LMS vary widely in how extensively they take advantage of the range of features and functions, it would be useful to gather information in such a way as to identify critical needs of the full spectrum of faculty users (from novice to intermediate to "power" users).

Starting in mid-April, surveys developed by the Needs Assessment group were distributed to students and faculty across campus (after receiving IRB approval). Questions asked included some that had been used in needs assessments conducted during deliberations preceding the adoption of D2L (2009) as well as additional questions new to this data gathering effort (go to Appendix B for the faculty survey questions and Appendix C for the student survey). Participants were invited to log in to an electronic survey, and to provide information about their experiences with and preferences about LMSs. They were assured that their responses would be anonymous. In all, completed surveys were submitted by 341 of 1588 faculty (a 21% rate of return) and 1334 students (4.7% response rate). Additionally, 79 posts were submitted to an open forum established for the University community.

## FACULTY INPUT

### SURVEY DISTRIBUTION:

- Temporary Faculty List [temporary-faculty-list-group@sjsu.edu](mailto:temporary-faculty-list-group@sjsu.edu) (distributed April 11)
- Permanent Faculty List <permanent-faculty-list-group@sjsu.edu> (distributed April 11)
- Probationary Faculty List <probationary-faculty-list-group@sjsu.edu> (distributed April 11)
- LMS Selection Committee (distributed April 11 and 16)
- College of Social Sciences and College of Humanities and the Arts department chairs (distributed April 15)
- D2L entry page (posted April 17)
- eCampus FIRs and various faculty members (distributed April 11-17)

Faculty category	N invited to participate	N surveys submitted
Lecturer	817	174
Tenure-track	132	58
Tenured	539	109
Total	1588	341

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## RESPONSES OF NON-USERS

A small proportion (15%) of survey respondents reported that they do not use an LMS. For the majority of these “non-users”, the three most critical considerations were that (1) using an LMS would increase their workloads, (2) they could do everything they wanted without one, and (3) they did not want to invest time and energy learning something that would be abandoned in a year or two. They also cited not having time to learn how to use the system and concerns about not having adequate access to technical support and “important” considerations.

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## RESPONSES OF USERS

Eighty-one percent of respondents had at least a year experience with an LMS, and 57% used one for at least 4 years. We asked why they like using an LMS. The most important reasons for using it were, in order of popularity:

1. It seemed like a way to accommodate students’ learning needs
2. It seemed like a better way to get feedback to students about their progress (e.g., grades, rubrics)
3. It seemed like a way to integrate content I wanted to integrate (e.g., video clips, internet-based material)
4. It seemed like a good way to “go green” and cut down on many instructional expenses (e.g., photocopying handouts)
5. It seemed like a way to engage students more fully in their learning (e.g., through online discussions and collaborative projects)

We asked faculty about the most important features. The top-ranking ones are, again in order of popularity:

1. Ability to download or upload assignments.
2. Easy to navigate
3. Quick email access to single student, the entire class, or select students in the class, for example, only students who did not turn in an assignment.
4. Create a rich and customized gradebook that is easy to build.
5. Being able to switch to the student view without having to log in as a student.
6. Automatic saving of items without having to constantly remembering to click 'save' after doing something.
7. Automatic support for students with disabilities (for example, giving double time on quizzes or exams without having to manually make a copy of the quiz or dropbox).
8. Being able to create or move features in bulk; for example, a drop box for every Tuesday and Thursday of the semester, without having to create each of them separately.
9. Integration with third party resources, such as the MLK library web-pages, or tools such automatic submission to Turnitin, MOSS (a plagiarism checker for computer programs) etc.
10. Being able to open multiple tabs of the user interface simultaneously; for example, editing a dropbox and a news item at the same time in two tabs.

Faculty expressed concern with usability of a system with which they interact constantly. There was some interest in mobile device access, audio/video recording, wikis, and real-time meetings, but those

did not rise to the top 10. The least pressing issue was allowing unregistered visitors to see the course materials, while blocking them from sensitive parts such as quizzes or student scores.

## STUDENT INPUT

### SURVEY DISTRIBUTION:

An invitation to participate in the survey was extended to students through various channels, as follows:

- LMS Selection Committee (distributed April 13 and 16)
- College of Social Sciences and College of Humanities and the Arts department chairs (distributed April 15)
- CommEvents (Communication Studies Department weekly newsletter) (distributed April 15)
- SLIS Students (distributed April 16)
- D2L entry page (posted April 17)
- Communication Studies faculty and students (distributed April 17)
- Distribution to "all students" through IT department (distributed April 17)
- eCampus FIRs and various faculty members (distributed April 11-17)

Student Category	N
Undergraduate	772
Graduate	562
Total	1334

Student responders registered with the Disability Resource Center (DRC): 95

Use and experience data is skewed by an over-representation of graduate students (42%). This is likely due to heavy participation by students in the School of Library and Information Science (SLIS). This is an online program which consequently will also affect the data. Undergraduates (58%) were fairly evenly represented across classes (1st to 5<sup>th</sup> year +). While the data are informative, they are not representative or generalizable due to study and sample constraints.

Overall, students seem relatively flexible about the use of an LMS. Over three-quarters of respondents (79%) cited having 24/7 access to course content and their instructors as the most important feature. Nearly two-thirds of respondents (62%) also cited easy to understand navigation as most important. The 1334 students who participated in the survey overwhelmingly have experiences with other LMSs (77%)--mostly the larger proprietary systems (Blackboard, Angel, and Web CT). Most (87%) report that all or some of their courses use D2L and in many classes (62%) their instructors use other web based resources. Ninety-four students reported that they are registered with the DRC.

Sixty-six percent report the LMS improves their learning experiences. Students rate D2L the same (41%) or better (48%) than other LMSs they have used.

Students want an LMS that looks and functions like the major software they encounter online (Google Docs; Facebook; Wikipedia, and Google+). These data broadly align with faculty survey data in that students and faculty both prize utility, ease of use, and an interface similar to popular online services.

Three hundred and four students (23% of those who completed the survey and 1% of the students enrolled at SJSU in Spring 2012) provided comments in response to the question, "If you would like to elaborate on your personal experiences, please do so here." Students described D2L in predominantly favorable terms because it was "one stop learning" and they felt that it helped the professor teach the course well. They wanted to have the faculty member equipped with the best LMS. See details of the qualitative analysis of student responses in Appendix D.

## LMS FEATURE EVALUATIONS

In order to adequately and accurately evaluate the features across the different LMSs under review, two primary modes of data collection were utilized. First, a rubric was developed to organize and allow for easy comparison of the different LMSs. The rubric highlighted major areas of consideration with varying subtopics (in Appendix F). The major areas included the following:

- Teaching and learning features
- Teaching and learning content features
- Teaching and learning grade features
- Teaching and learning quiz features
- Security
- Accessibility
- Support
- Collaboration
- Analytics
- Technical specifications
- Additional top-level faculty needs

For all of the areas mentioned above, options were provided to determine whether or not the criteria was met for each LMS. This included the choices of **DOESN'T MEET**, **MEETS**, **EXCEEDS**, and **SUPERIOR**. Also, the rubric included an area where feedback regarding the ease of use of the different areas noted above was provided. The feedback ranged on a scale from **1 (NOT EASY)** to **5 (VERY EASY)**. The rubric also provided an area where the user could indicate the level of importance for the various areas. This included the importance options of **LOW**, **MEDIUM**, and **HIGH**.

The other mode of data collection involved interviews. For the different LMSs, committee members contacted educational technology experts knowledgeable about the options being explored. There was not a specific question format followed, but many of the questions centered on the following:

- What other colleges/universities are using this LMS?
- What makes this LMS different from others?
- How well will this LMS work for faculty who have never used an LMS?
- How well will this LMS work for faculty who are experienced LMS users?
- How will this LMS build out in the future? For example, does the LMS have a mobile app? How well does it work?
- How understandable is the online help documentation?

Also, to gather the perspective of universities and colleges that are using or planning on transitioning to the use of the various LMSs under review, informal telephone and/or webconferences were conducted to gain an insight on their institutions' experiences. These interviews explored topics such as administration, migration, faculty and student feedback, responsiveness, and updates. The data collected from the rubrics and interviews provided a way for these different LMSs to be evaluated.

## FINDINGS

### BLACKBOARD

Blackboard was found to meet the basic criteria in most areas of evaluation. It exceeded the basic criteria in areas such as assignment dropbox, announcements, rubrics, secure guest access, online community support, and technical support references. Blackboard did not meet the basic criteria in a few key areas such as the ePortfolio function, peer view for assignment submissions, ability to migrate from the current LMS, access to source code, and native cloud service. A close evaluation of the Blackboard ePortfolio feature found it initially confusing to use and not particularly attractive. Although Blackboard does hold the Gold certification from The National Federation of the Blind, a test of the LMS using assistive technology found a few accessibility problems. Blackboard was evaluated as an adequate LMS, but not a standout.

### CANVAS

Canvas received superior marks in most areas, including announcements, assignment dropbox, calendar, course file storage, discussion boards, email, groups, ePortfolio, file types supported, learning module design flexibility, multimedia, web design tools, ability to customize the gradebook, discussion grading, peer view for assignment submissions, question pool management for quizzes, accessibility, course import/export/copy, tutorials, timely support and response, cloud storage, mobile device compatibility, access to source code, automatic peak load management, native cloud service, scalability, stability, and ease of navigation. Two areas of concern were the lack of a blog feature and tracking reports. Features such as the activity stream, SpeedGrader, recording video on the fly, and drop and drag capabilities made Canvas stand out from the other LMSs. For example, with the Activity Stream, users can monitor the latest activity in all their classes—and access those activity points, such as a discussion—from the activity stream without clicking through to the class. SpeedGrader allows instructors to open files in nearly any format without downloading them, grade using a customized rubric, discuss the evaluation with the student—all in one window. The Rich Content Editor allows users to embed audio, video, images, and text in announcements, discussions, grading comments—anyplace where faculty and students communicate. In addition, faculty and students set their preferences for how they want to be notified about activities such as new discussion posts and announcements; choose email, Facebook, or text. A close evaluation of the ePortfolio function found that it was efficient, aesthetically pleasing, and has a clean interface. Additionally, Canvas was found to be the most accessible option due to Instructure's strict adherence to the Web Content Accessibility Guidelines (WCAG) set forth by the World Wide Web Consortium (W3C). Canvas was evaluated as the top LMS for faculty and student use.

### DESIRE2LEARN

Three versions of Desire2Learn, the current 9.2, the upgrade to 9.4, and the new 10.0, were evaluated. Although version 10 demonstrated improvements over 9.2 and 9.4, it stood out as exceeding criteria in only a few areas, met most criteria, and is lacking in several. D2L met the basic criteria in areas such as

assignment dropbox, chat, course file storage, discussion boards, email groups, quizzes, file types supported, learning module design flexibility, built-in voice board, flexibility of gradebook views, secure guest access, and tutorials. Version 10 demonstrated improvements in integration with assessment tools for creating and managing exams, plagiarism detection software integration, content management, and automatic support for students with disabilities. All versions exceeded the criteria for ability to shift roles, web linking outside the LMS, and instructor feedback tool. D2L did not the basic criteria in areas such as ability to customize the gradebook, discussion grading peer view for assignment submissions, access to source code, and native cloud service. A close evaluation of the D2L ePortfolio function in version 10 found it was cumbersome, inefficient in terms of the number of clicks needed, and lacking in an ability to make a rich presentation. As with Blackboard, D2L holds the Gold certification from The National Federation of the Blind. However, a test of the LMS using assistive technology did reveal a few accessibility problems. D2L was evaluated as an adequate LMS.

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## MOODLE

Moodle was judged as superior in areas such as online community support, technical support references, access to source code, software licensing, stability, automatic saving, and ease of navigation. It exceeded the basic criteria in areas such as importing publisher-developed quizzes, question pool management, course export/import/copy, user statistics, development technology, and automatic support for students with disabilities. Moodle met the basic criteria in areas such as blog, calendar, ePortfolio, rubric revision, and web-conferencing/synchronous tools. Close evaluation of Mahara, an open source ePortfolio tool that can be integrated with Moodle, found it to be confusing at first, but allowed the user to create a rich and complex presentation. Unfortunately, Moodle has not been certified by the National Federation of the Blind, so its accessibility is in question. Moodle was evaluated as a good LMS.

## LMS COST EVALUATIONS

### FINDINGS

#### OVERVIEW

In the analysis of hard costs (such as licensing and hosting) all four LMSs were about the same. More detailed analyses were conducted on the costs of Canvas and D2L version 10.0, including end-user support and integration with Peoplesoft (Appendix G, Cost Analysis). The costs from the vendors are fairly certain. The “hard” costs for course conversion, student assistants, training provided by faculty-in-residence are estimates based on past practices. “Soft” costs, or faculty and staff time, represent additional indirect costs to consider. The committee recognizes these costs as rough estimates that may have a wide range.

The committee is cognizant of the indirect costs of transitioning, such as faculty and staff time learning the LMS. However, there are costs associated with staying with the current proprietary system, which does not take advantage of modern enterprise cloud computing. On the spreadsheet, this feature is indicated on the fourth line. D2L's "production environment" is replaced by Canvas's cloud computing strategy. The Software as a Service (SaaS) model gives SJSU access to a much wider set of features. This is evident in the ePortfolio costing. With D2L we order features off a menu and each piece adds to the bill whereas Canvas is a buffet where the wider consortium of Canvas customers fuels innovation and makes new features available for all. With SaaS we benefit from the Network Effect where each new customer brings on expertise, innovation and coding requests. This is not available in our current installed software arrangement.

#### COSTING CATEGORIES

In identifying costs, the committee has done its best to record real dollars. However, some categories are estimates and will depend on actual use.

#### LEARNING MANAGEMENT SITE ENVIRONMENT

The vendor charges a license/subscription fee on an annual basis based on our 25,000 FTE. We also asked for a way to test improvement in the systems in an isolated way, separate from the working system as well as a certain amount of disk storage for each student. The D2L bid separates out the cost of software license and the machinery to host the software. In the Canvas bid these two are combined.



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## SUPPORT SERVICES

D2L promises 24/7 support for administrators and end users while Canvas offers “after-hours support.” The committee has also included the cost of staying with the faculty-in-residence model for training, with the recognition that a different training model might be used.

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## FUNCTIONAL AND 3RD PARTY INTEGRATION

SJSU's student information system (PeopleSoft) is well integrated with D2L after many rounds of programming changes. Recreating this connectivity with Canvas is a large expense in the first year. The cost for Canvas of ongoing maintenance of this connection is an unknown.

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## DATA MIGRATION AND ARCHIVING

The committee recommends incentives for faculty to offset the time required to retrain. Canvas will convert courses from D2L archives for a fee.

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## PRODUCTS

D2L offers an add-on ePortfolio product.

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## NOTES

Though we did not examine in depth all options for the final round of cost comparisons, it should be noted that "hard" costs for Moodle hosted by Fullerton were significantly less than for the other three options that we considered. However, that cost did not include the IT support SJSU would need to hire in support of Moodle.



## LMS RECOMMENDATION - CANVAS (MAJORITY PERSPECTIVE)

The LMS Committee after extensive research and deliberation recommends that the Provost select Instructure and its learning platform Canvas for SJSU's new Learning Management System. Blackboard was viewed as a lateral move that would not deliver substantial improvements over D2L. Moodle would require technological support that increased costs and complexity beyond what committee felt was reasonable for SJSU to support. D2L received a good, but not outstanding, evaluation.

Canvas best meets the criteria under the Provost's charge:

1. Usability – a system that will meet the needs of students and faculty
2. Sustainability – cost/ Cost for D2L or another LMS needs to be sustainable
3. Continuity – thinking about disruption to faculty and programs and the importance of long-term commitment with an LMS

Below is a narrative evaluation and analysis. For specific scores and costs, review previous sections of this report.

### USABILITY – A SYSTEM THAT WILL MEET THE NEEDS OF STUDENTS AND FACULTY

Canvas is native web 2.0 - networked, user driven, and customizable. The alternative systems are based, both in code and in epistemology, on mainframe command and control architectures. While they may add web 2.0 features such as blogs or embedded video, their basic theoretical construct is hierarchical and standardized, not customizable. For this reason Canvas is closest to being "ideologically neutral" in the executing of pedagogy. That is, because it can be customized, faculty can use tools and techniques based on the learning objectives of the course and the faculty's pedagogical approach, not of an LMS designer. Canvas opens space for new developments in teaching and learning. Because it is updated regularly, new innovations can be integrated in a timely manner.

As a native cloud system, its interface is similar to widely-used web-based services and applications. This benefits students in ease of use and comfort level. The customization of the students' view accommodates different preferences for learning while maintaining the instructional integrity of the course as it is designed.

Canvas has the easiest and most intuitive interface and is the only LMS that has functionality comparable to any of the open-web services (Facebook, Gmail, etc.). This was a prime consideration for students and faculty as noted in the Needs Assessment section. Of all the LMSs, Canvas met or exceeded expectations in all categories of the evaluation rubric and overall scored highest (more in Feature Evaluation section). Reports from other universities and interviews with faculty using the system confirmed the utility and ease of use for faculty and students as well as increased faculty adoption.

Like most cloud native software, Canvas is constantly upgraded rather than on a quarterly cycle. This means problems are addressed quickly. New versions of features are also introduced on an initial "opt-in" basis to allow faculty the time and opportunity to move to the newer versions at their own pace.

Tailored notification systems (email, text, social networking) interface seamlessly with student communication technology patterns, thus reducing communicative friction between instructor and student. This was another key issue that emerged in the needs assessment surveys. Canvas also has an operation application for access via mobile devices. In addition, Canvas was rated the highest in terms of functional accessibility for users with disabilities.

For faculty, Canvas is easy to use and is the only LMS whose design conforms to current pedagogical research on ICTs in learning. For example, the use of short contextualized video segments creates the critical instructor presence that is the hallmark of good online pedagogy. Canvas allows for the video to be recorded and embedded without leaving the page - the video is inserted as easily as it is to add text. No other LMS has such a sophisticated tool. The instant video feature in Canvas is revolutionary and removes many barriers associated with developing instructor video. The drag and drop feature, so basic to many online applications but absent in most other LMSs, combined with access to all aspects of the course from one screen, result in greatly reducing the number of clicks needed to complete basic tasks. Finally, comprehensive help and set-up assistant features make using Canvas easy for novices and experts.

#### SUSTAINABILITY – COST/ COST FOR D2L OR ANOTHER LMS NEEDS TO BE SUSTAINABLE

Based on an initial comparative analysis, all LMS systems were in a similar range for base direct costs. There was a robust debate on soft costs, such as faculty time in transitioning to a new system and training. The committee decided that such costs were not easily quantifiable. Therefore, while certainly an important factor, the estimates for these soft costs should be reviewed with caution.

Ease of use can mitigate training and migration soft costs. Instructure has a proactive migration and training process. Current users at other colleges and universities state that they have been impressed by the company's service and attention. When problems come up they get solved quickly, including software fixes.

The growth of Instructure's market share has been robust in both the public and private sector; Canvas has been adopted by over 160 institutions including U of Texas Austin (over 38,000 students). It now appears that after a two-year study and pilot project, the U of Washington is set to adopt Canvas. Former Google CEO Eric Schmidt is an investor. The committee has determined that Canvas has financial viability moving forward in terms of investment, revenue and market position. Outside consultants expressed concerns about the long-term financial viability of proprietary LMS systems (Blackboard and D2L) versus open source (Moodle and Canvas). Even advocates and users of other systems stated that they felt that Canvas represented "the future" of LMS.

Instructure uses a "Software as a Service" (SaaS) business model combined with open source code. This means that anyone can take and use the Canvas code. This provides a key incentive for Instructure to maintain a high level of customer service. Finally, Instructure uses Amazon Web Services to host its system. This has several advantages including the ability to seamlessly scale based on number of courses or peak load times and an ecommerce level of security. Hardware costs are absorbed by Amazon, which allows Instructure to benefit from the latest hardware technology and the decreasing costs of storage (the cost of digital storage per gigabyte halves every 18 months).

Finally, Instructure has offered SJSU an excellent deal on faculty technical support and a heavily discounted first year of service to off-set running D2L while we work on migrating to Canvas. Faculty will be delighted by its friendliness and usability. The Canvas interface is elegant, practical, and smart.

#### CONTINUITY – THINKING ABOUT DISRUPTION TO FACULTY AND PROGRAMS AND THE IMPORTANCE OF LONG-TERM COMMITMENT WITH AN LMS

Canvas is the most painless option in moving to a new LMS. The system is easy to use and intuitive, making training less onerous, less costly, and less time intensive. The help feature and step-by-step guide as well as its flexibility make it an excellent fit for novice and expert user alike. Imports of current D2L courses to Canvas were generally seamless and quick. Some committee members had issues with migrating aspects of their courses over to Canvas, but engineers worked with faculty to solve those issues. Instructure is willing to customize the Canvas code and migration process. The proposed process is for a beta test group of faculty to work with Instructure engineers to migrate courses, thus identifying and addressing critical issues prior to wider faculty migration. Faculty will have the option of a batch migration or migrating classes on their own. Canvas will provide training support as needed. Moreover, Instructure has agreed to provide the Canvas code to use as a failsafe against the company's sale or failure.

When examining overall cost, ease of transition, available features, and user interface, Canvas is clearly the most viable option. SJSU has simultaneously provided the backbone of the high tech workforce in Silicon Valley and lagged in its technological infrastructure. In terms of a learning management system, Canvas would bring SJSU to the forefront of innovation. Choosing Canvas will signal to potential partners at Apple, Google, and Cisco that SJSU “gets it” and we will be a sophisticated partner moving forward. Blackboard and D2L are the past, Moodle is the present, and Canvas is the future.

Canvas represents an opportunity for SJSU to take the lead in instructional technology. Instructure is a company that has demonstrated its willingness to negotiate and work with administration, faculty and staff. Canvas is both a powerful and easy to use system.

## D2L (MINORITY PERSPECTIVE)

This section of the report presents the case for selecting D2L as the campus learning management system (LMS) to reflect the minority opinion of the committee. The review itself was initiated by Provost Junn due to the very serious financial constraints the campus faces due to the decline in state funding.

The Provost identified in our first meeting three priorities to take into consideration in selection of an LMS: sustainability (with regard to cost), usability, and continuity.

## SUSTAINABILITY

With regard to sustainability (cost), long term there is parity. Based on the information compiled and confirmed by eCampus administrators, costs across the various options are comparable. Given no dramatic differences in cost, which was a primary reason for the review, there is no reason at this point in time to make a move to a new LMS. In fact, the short term costs of changing our LMS would be considerably higher. This would come at a time when we face enormous challenges with regard to budget cuts. The costs of changing to a completely new LMS are unavoidable. We would need to maintain two systems, provide support for two systems, migrate all courses to the new LMS, develop new training materials, integrate a new LMS with Peoplesoft and other 3rd-party resources, and bear the cost after transition of maintaining D2L data for five years (as we've done for Blackboard).

In addition, there is the cost to faculty and programs with regard to the time it will take to get back to the point they are at now in order to learn a new LMS. The review committee engaged in an exercise to quantify this cost. While methods to accomplish this may vary, it is clear the cost to transition to a new LMS is much greater in the short term compared to the cost associated with an upgrade in D2L. The short term costs of maintaining D2L and transitioning to version 10 down the road call for fewer changes and resources than a move to a new LMS. They include back end changes to permissions/structure, staff/FIR time modifying existing text-based resources (eCampus help and short courses), developing video resources, and less time, compared to a new LMS, on the part of faculty and programs to get up to speed when they move to version 10.

## USABILITY

With regard to usability, the focus is on meeting the needs of students and faculty. Our task is to understand where the faculty are at this point in time and match their needs to an LMS. The 56% faculty adoption rate (see LMS Usage Report, Appendix A) and voluntary expressions of satisfaction with D2L (see LMS Public Forum Report, Appendix E) indicate that D2L is meeting the needs of many faculty. 58% of the 304 students who offered comments on the student needs survey (23% of respondents, 1% total response rate) indicated the need to maintain D2L at SJSU because of high instructor familiarity (established learning) and current use (see Qualitative Analysis for Student Survey Item #15, Appendix D). This contrasts with 17% of the students who expressed a need to transition away from D2L. The following additional findings from the comments in the student needs assessment survey provide further support with respect to the usability of D2L:

- D2L is the best option given the other LMS options available (21%, 64 responses)
- 49% positive word association between the terms "D2L" and "easy to use" and "familiar"
- 69% robust semantic association (norm range = 42%) between "D2L" and "useful" and "efficient," "organization system"

An ideal situation exists when current needs are being met while the LMS is continuing to develop ahead of the faculty. This way when faculty are ready for the next level of use it's there waiting for them. Version 10 of D2L offers new features such as video that can be easily recorded and included in discussions. It has very good and multiple views, context sensitive help, consistency across the site for resources/features, post first for discussions, accessibility checks built into the workflow (e.g. alt text for images), and flexible options for grade calculations. When asking then the question, does D2L meet faculty needs, the answer would be yes.

## CONTINUITY

With regard to continuity, this priority specifically focused on the disruption to faculty and programs and the importance of a long-term commitment to a learning management system. Remaining with D2L, even given the transition to version 10 at some point, is the only choice that will result in the least and minimal disruption. D2L is the only LMS that provides the level of continuity faculty need and had expected given our recent choice in 2009 to adopt D2L. The student needs assessment report revealed that, among the 304 students who included responses to the question, "If you would like to elaborate on your personal experiences, please do so here" (23% of respondents, 1% total response rate), there was a 32% negative thematic correlation between SJSU and the "indecisiveness" regarding the LMS (see Appendix D). The feedback board input from 71 respondents (faculty, staff, students, administrators; go to Appendix E) indicates this particular criterion stands out for many faculty. In the online feedback board, many participants made impassioned pleas for us not to change our LMS.

Our faculty have already weathered transitions from WebCT to Blackboard and then to D2L. They know firsthand the costs to them personally as well as to the costs in activities (e.g., research) that must be put aside as they build again their ability to use a new LMS. This is not the time for yet another disruption that forces faculty back to square one with a completely new LMS. The disruption not only impacts individual faculty, but also has a deep negative impact upon online programs. Transitioning whole programs (e.g., Occupational Therapy and Public Health) to a new LMS places burdens on entire departments that, if not clearly needed due to the unsuitability of an LMS, are not practical. This is particularly so given that these programs have just recently come back up to speed after their transition to D2L. Add to this the uncertainty that comes with any new group relying on venture capital, and it would appear that a change in LMS sometime in the future would be more appropriate and feasible. The possibility of further disruption even after the transition is greater with Canvas than with D2L. It is unreasonable to force yet another change on faculty and programs at this point in time.

## APPENDIX

Appendix A. LMS Usage Report

Appendix B. Faculty LMS Survey

Appendix C. Student LMS Survey

Appendix D. Qualitative Analysis for Student Survey Item #15

Appendix E. LMS Public Forum Report

Appendix F. LMS Evaluation Rubric

Appendix G. Cost Analysis

## APPENDIX A. LMS USAGE REPORT



## The Use of Desire2Learn at San José State University

Desire2Learn (D2L) is currently being used across the campus of San José State University (SJSU). It has been used for four semesters beginning in Fall 2010. The usage can be analyzed according to the classification of the user: faculty and student. D2L data were gathered based upon requests sent from the eCampus department of SJSU. eCampus specified the information to be reported to include faculty and student use of the learning management system. The D2L data requisition team identified these items, clarified with eCampus on the details, and then pulled the required data from the records. The results suggest that there has been a steady increase in the number of users and the amount of use – by both faculty and students – across the semesters D2L has been on the SJSU campus.

### Desire2Learn Faculty Adoption Information

During Spring 2012<sup>1</sup>, 56% of SJSU faculty members were using D2L. This was an increase from the previous semester (55%). There has been a steady increase in D2L adoption amongst faculty members across all four semesters (See Figure 1).

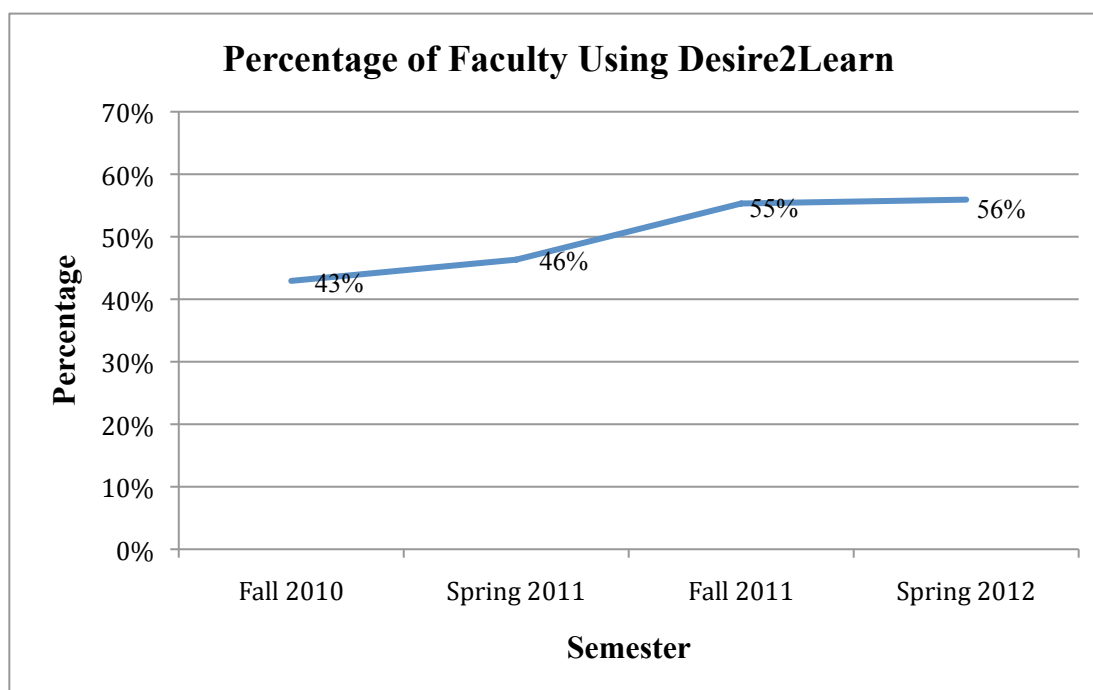


Figure 1. Percentage of faculty using Desire2Learn

<sup>1</sup> As of April 11, 2012

The number of faculty members employed at SJSU varied each semester as well as the number of those who were actively using D2L. The total number of faculty members employed as instructors at the university was based upon data collected by the Office of Institutional Research. The number of faculty members using D2L was based on data provided by D2L's Customization Consultant and Technical Services Engineer. Since D2L's introduction on campus, the usage has steadily increased. Between Fall 2010 and Spring 2012, there was an increase of 216 faculty members using it.

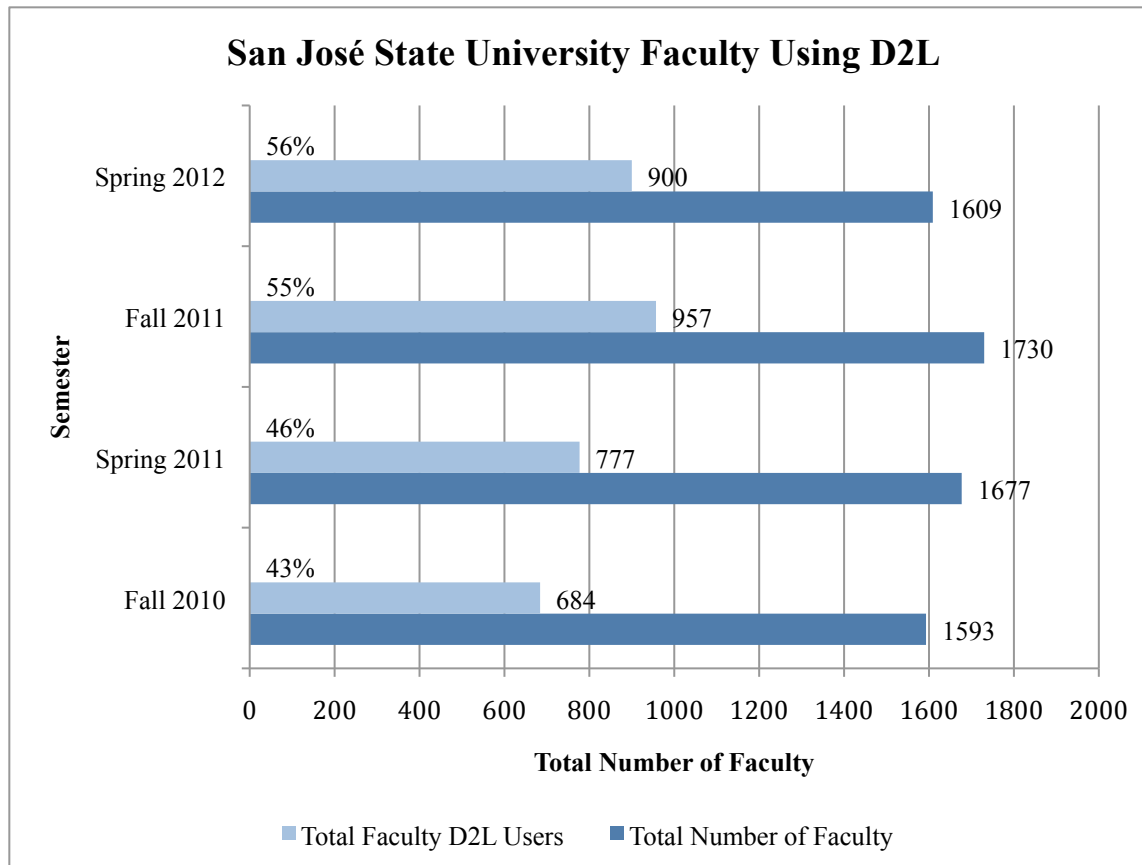
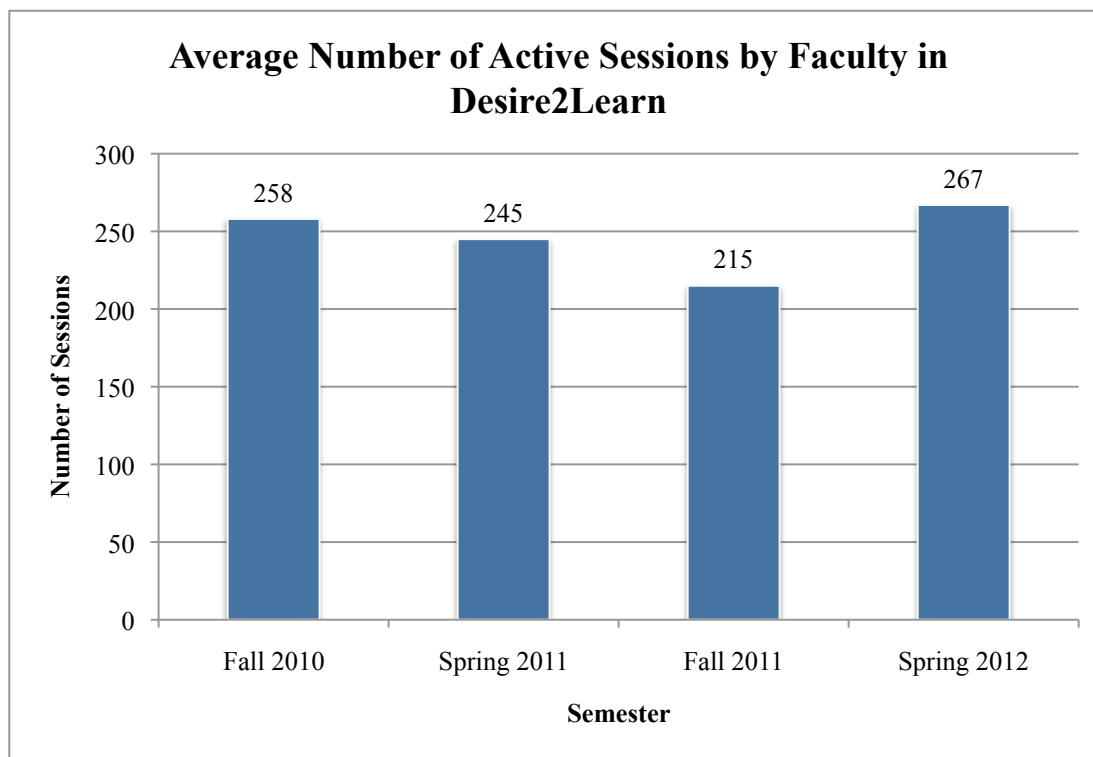


Figure 2. San José State University Faculty using Desire2Learn

## Faculty Sessions

When a user logs into D2L, a session is logged. A session is considered an active session when something has been done within the learning environment, for example, adding content or posting a discussion. The number of active sessions (greater than one minute in length) were calculated for each semester and averaged across the entire faculty population. The most recent semester, Spring 2012, has the highest number of sessions logged (n=267).

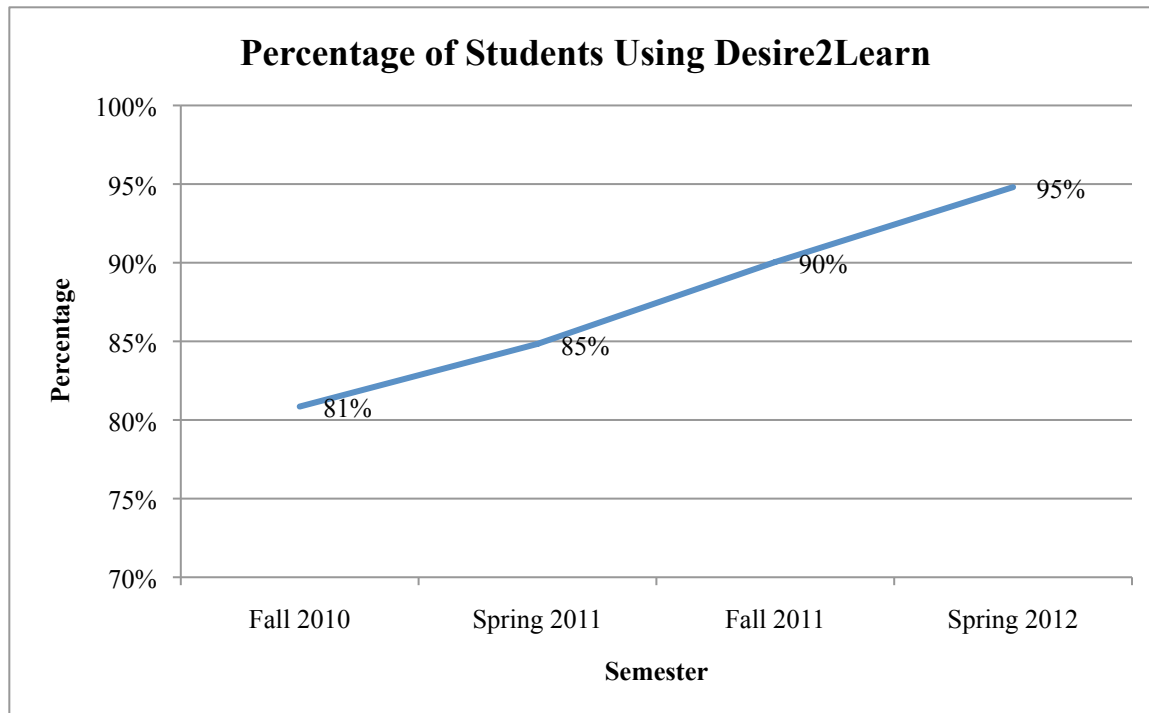


*Figure 3.* Average number of active sessions by faculty in Desire2Learn

For each active session, the amount of time spent in D2L was tracked. The results indicated the average session length in minutes in Spring 2012 (M=65) had increased in comparison with previous semesters: Fall 2010 (M=62), Spring 2011 (M=63), and Fall 2011 (M=62). The data revealed there was a steady increase in the adoption of the learning management system D2L over the course of four semesters. There was also an increase in the number of sessions as well as the session length on average for the faculty using D2L at SJSU.

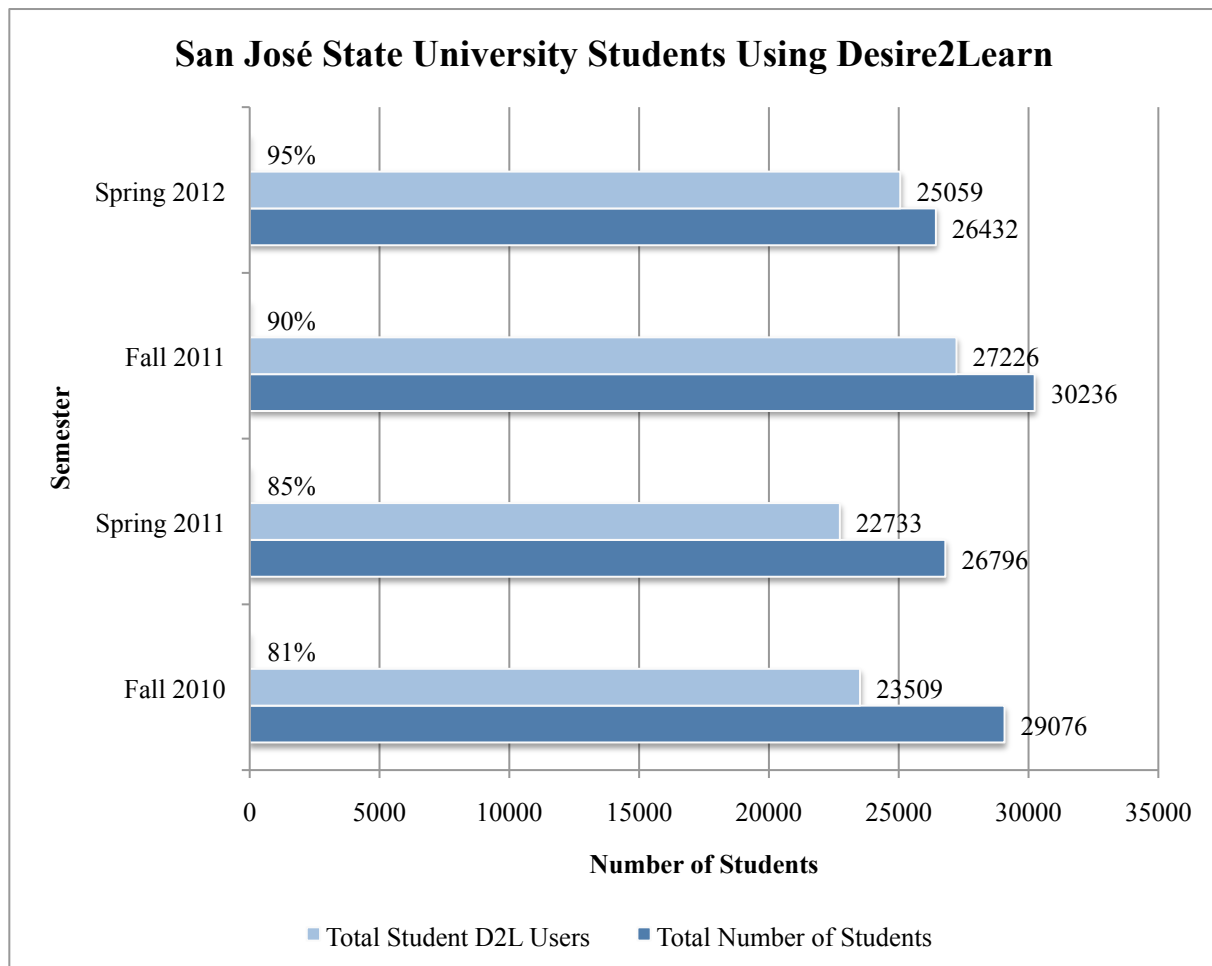
## Desire2Learn Student Adoption Information

During Spring 2012, 95% of SJSU students used D2L. This was an increase from the previous semester, Fall 2011, where only 90% of students used D2L (See Figure 5).



*Figure 5.* Percentage of students using Desire2Learn

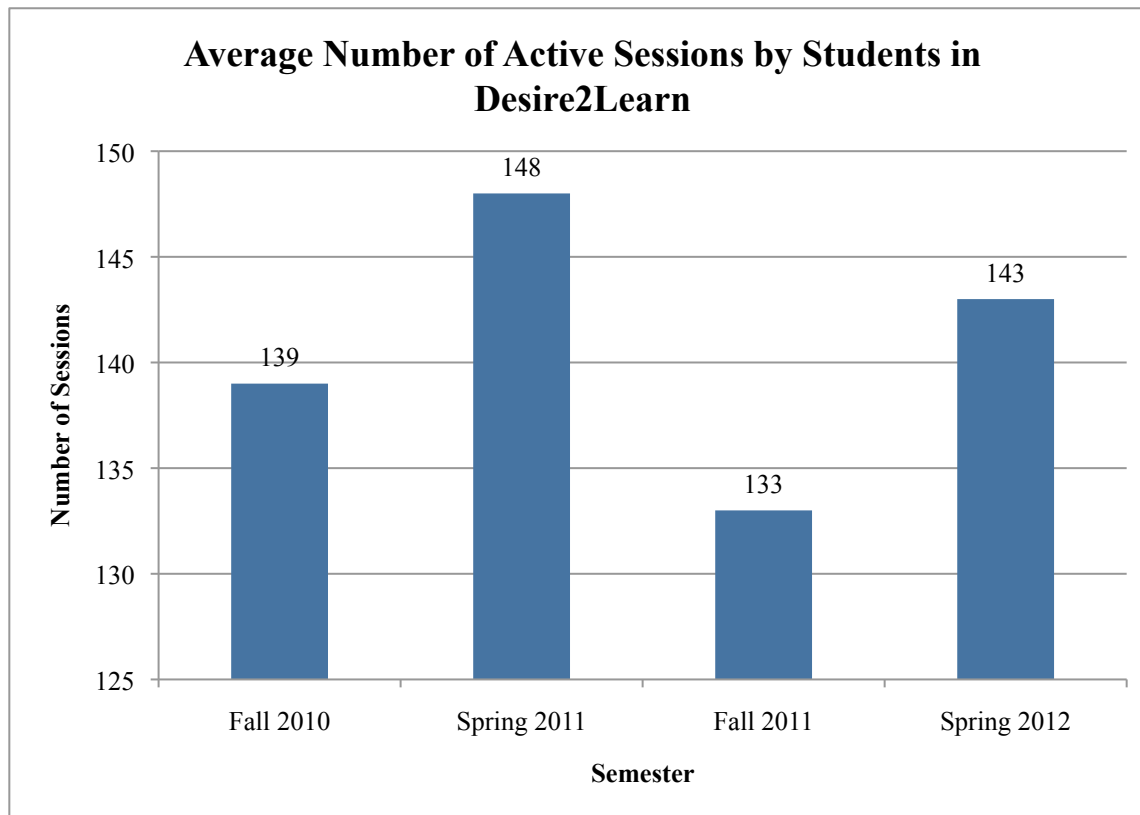
For the past four semesters, the number of students enrolled at SJSU has fluctuated. The figure below displays the number of students enrolled at SJSU each semester as well as the number of students who used D2L.



*Figure 6. San José State University Students using Desire2Learn*

## Student Sessions

An active session is logged in D2L when a user engages with the learning environment. Those active sessions with a minimum length of 1 minute were collected for all student D2L users. In Spring 2012, there were 143 active sessions with the three previous semesters within the range of +/- 10 (See Figure 7).



*Figure 7.* Average number of active sessions by students in Desire2Learn

For each active session, the amount of time a student spent in D2L was recorded and averaged. The average session length in Spring 2012 was 52 minutes. This was an increase in length from previous semesters: Fall 2011 (M=48), Spring 2011 (M=47), and Fall 2010 (M=47). During the four semesters D2L was integrated into the teaching and learning activities on the SJSU campus, there has been an increase in the number of students utilizing it. Over 25,000 students during the Spring 2012 semester were using D2L for approximately 143 sessions that lasted 52 minutes each.

## APPENDIX B. FACULTY LMS SURVEY

## Faculty Survey

Please tell us a little bit about yourself. Are you

- ☐ Tenure Track Faculty
- ☐ Tenured Faculty
- ☐ Lecturer

How long have you been teaching at the College/University level (at SJSU or elsewhere)?

- ☐ Less than 1 year (this is my first year)
- ☐ 1-2 years
- ☐ 3-5 years
- ☐ 6-10 years
- ☐ 11-20 years
- ☐ over 20 years

What is your primary operating system?

- ☐ Windows
- ☐ Mac
- ☐ Linux
- ☐ Other

With respect to Learning Management System use (e.g., D2L or any other LMS), would you characterize yourself as:

- ☐ A non-user
- ☐ A novice
- ☐ An intermediate user
- ☐ A power user



How long have you been using an LMS?

- ☐ This is my first year
- ☐ 2-3 years
- ☐ 4 years or more

What prompted you to use an LMS in your teaching? Please read the individual statements and decide which option best fits the statement.

	a critical consideration for me	an important consideration for me	a minor consideration for me	not a consideration for me at all
My department/chair required it, or else I would not be using it				
It's the norm in my department				
It seemed like a good way to "go green" and cut down on many instructional expenses (e.g., photocopying handouts)				
It seemed like a way to integrate content I wanted to integrate (e.g., video clips, internet-based material, etc..)				
It seemed like a way to accommodate students' learning needs				
It seemed like a way to engage students more fully in their learning (e.g., through on-line discussions and collaborative projects)				
It seemed like a better way to get feedback to students about their progress (e.g., grades, rubrics, etc..)				
It seemed like a way to reduce my workload (e.g., carrying material over from one course to another more easily, creating drop boxes for students, setting up easier processes for grading)				
It seemed like a good way to enable me to spend less time on campus without cutting in to my ability to serve my students				
It seemed like a way for me to re-energize myself about my teaching				

Are there any other reasons why you chose to use an LMS that were not mentioned in the previous question?

How much time per week do you spend using your LMS?

- ☐ Less than 1 hour
- ☐ 1-5 hours
- ☐ 6-10 hours
- ☐ More than 10 hours

In thinking about using Desire2Learn or any other learning management system, please rank the following items based on their importance to your use in the classroom. These items are in no particular order.

	Absolutely must have	Important to have	Nice to have, but as an upgrade	Not important for my needs	Not worth having
Easy to Navigate.					
Quick email access to single student or entire class.					
Full access via a mobile device (smart phone or table).					
Ability to download or upload assignments.					
User interface similar to social media such as Facebook.					
Compatible with Respondus or other test management software.					
Ability to communicate or have a meeting with the entire class online in real time (similar to Eluminate).					
Full Integration with PeopleSoft.					
Ability to Record student/instructor voice, video or screen activity.					

Collaboratively edited documents (in the style of a Wiki or Google Docs) that allow groups of students to share in the editing process and commenting on each other's contributions, showing to students and instructors who contributed what.					
Open access; that is, allowing unregistered visitors to see the course materials, while blocking them from sensitive parts such as quizzes or student scores.					
Support for clickers: presenting clicker questions, getting input through hardware clickers/web/mobile, integrating with gradebook.					
Support for online polling software such as PollEverywhere.					
Integration with third party resources, such as the MLK library web-pages, or tools such automatic submission to Turnitin, MOSS (a plagiarism checker for computer programs) etc.					
Being able to create or move features in bulk; for example, a drop box for every Tuesday and Thursday of the semester, without having to create each of them separately.					
Ability to email only select students in the class. For example, only students who did not turn in an assignment.					
Automatic support for students with disabilities (for example, giving double time on quizzes or exams without having to manually make a copy of the quiz or dropbox).					
Being able to switch to the student view without having to log in as a student.					
Automatic saving of items without having to constantly remembering to click 'save' after doing something.					
The ability to run a local instance of the LMS, to allow deep integration of the user interface or database with departmental tools or processes					
Being able to open multiple tabs of the user interface simultaneously; for example, editing a dropbox and a news item at the same time in two tabs.					

Create a rich and customized gradebook that is easy to build.					
Authoring/displaying complex text such as mathematical equations, computer code, chemical formulas, foreign alphabets.					

Would you like to add a comment on any specific item from the above question?

Is there anything that we missed that you would like to see in an LMS that we currently did not list two questions ago or that you think is not user friendly in the current LMS and would change in a new LMS?

You have indicated that you do not use an LMS in your classroom. We would like to know a little more about how you made the decision to not use an LMS. Please read the following statements and select a choice that best fits that statement.

	A critical consideration for me	An important consideration for me	A minor consideration for me
I am intimidated by the technology.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I've had a bad experience with an LMS in the past.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't have (or want to take) the time to learn how to use one.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm concerned that there won't be sufficient access to tech support, if I have difficulties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm concerned about security issues (e.g., hacking into student grades, etc..).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think an LMS will increase my workload, even once I get up and running with one.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I can do everything I want for my classes without one.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think using an LMS would result in more interaction with students than I want.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I'm concerned students would expect me to check in to the LMS more/frequently than I have time for.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LMS's are necessary for on-line classes, but I don't see their utility for face-to-face classes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't think my students would want to participate in the on-line activities that come with an LMS.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my students lack the technological sophistication to make an LMS work without a lot of extra help from me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't want to invest a lot of time and energy into learning something that may well be abandoned or changed in a year or two.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Is there anything else you would like to add for why you do not use an LMS?

Are there circumstances that would make you more likely to use an LMS in your teaching?

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## APPENDIX C. STUDENT LMS SURVEY

## STUDENT SURVEY

What Gender are you?

- ☐ Male
- ☐ Female

As of today, I am:

- ☐ First-year Student
- ☐ Second-year Student
- ☐ Third-year Student
- ☐ Fourth-year Student
- ☐ Fifth-year Student and above
- ☐ Credential Student
- ☐ Graduate Student

Are you currently registered with the Disability Resource Center?

- ☐ Yes
- ☐ No

In the current semester, how many of your courses are using Desire2Learn

- ☐ All
- ☐ Some
- ☐ None

How many of your courses in a semester, on average, use a course website other than Desire2Learn?

- ☐ All
- ☐ Some
- ☐ None

Have you found that the learning management system Desire2Learn or course website improves your over all learning experience?



- ☐ Yes
- ☐ No

Please explain why you selected the answer you did in the previous question.

In thinking about Desire2Learn or any other learning management system, please rank the following items in order of importance.

	Most Important	Important	Neutral	Somewhat Important	Least Important
Easy to understand navigation					
Easy access to the instructor (chat/ email)					
Full access via a mobile device (cell/tablet)					
Submit/retrieve assignments					
Speed (Fast page loading)					
Ability to communicate with other students (individually)					
Ability to communicate with the class as a whole					
24/7 access to course materials					

Have you ever used a different learning management system other than Desire2Learn?

- ☐ Yes
- ☐ No

If you answered yes to the previous question, select ALL of the Learning Management systems that you have worked with in the past whether at SJSU or other schools. If you do not remember then select "I do not recall."

BlackBoard      WebCT      Canvas      Moodle      Angel      Sakai      I do not recall

How would you compare Desire2Learn with other learning management systems you have used?

Desire2 Learn is:

- ☐ Much Better
- ☐ Better
- ☐ About the Same
- ☐ Worse
- ☐ Much Worse

Thinking about other (non-university/academic) websites you use on a regular basis, what website do you wish the learning management system looked and operated like? Check all that apply?

- ☐ Facebook
- ☐ MySpace
- ☐ Wikipedia
- ☐ Google+
- ☐ GoogleDocs
- ☐ Yahoo!
- ☐ iTunes/iTunesU

If a website was not listed in the previous question, please list so now.

If you would like to elaborate on your personal experiences, please do so here.

## APPENDIX D. QUALITATIVE ANALYSIS FOR STUDENT SURVEY ITEM #15

## Qualitative analysis for student survey item #15

Conducted by Dr. Rona Halualani

### Summary

Three hundred and four students (23% of those who completed the survey) provided comments in response to the question, "If you would like to elaborate on your personal experiences, please do so here." Students described D2L in predominantly favorable terms because it was "one stop learning" and they felt that it helped the professor teach the course well. They wanted to have the faculty member equipped with the best LMS -- although it is clear that they may have framed D2L in this way because they did not know of many other LMS options (some did, the majority did not).

### Methodology

- 1) Line by line, item by item coding via grounded theory approach and domain coding (Spradley, 1979)
- 2) Run through NVIVO (formerly NUDIST software) and QDAMiner as a validation check

### Analysis

- 304 responses
- Average word count per response: 55 words
- Range = 12 words (shortest response) – 98 words (longest response)

### Key Emergent Themes

- Need to maintain D2L because of high instructor familiarity (established learning) and current use (58%, 176 responses)
- Dislike D2L and want the LMS changed (17%, 52 responses): OF THESE RESPONSES, THE FOLLOWING REPRESENTS ITS SUB-THEME BREAKDOWN:
  - D2L crashes frequently (38%, 18)
  - Unattractive interface in D2L (26%, 14)
  - D2L grading system is confusing (19%, 11)
  - D2L quiz system is difficult to use (17%, 9)
- D2L is the best option given the other LMS options available (21%, 64 responses)
- Miscellaneous (non-patterned, random) (4%, 12)
- 49% positive word association between the terms "D2L" and "easy to use" and "familiar"
- 69% robust semantic association (norm range = 42%) between "D2L" and "useful" and "efficient," "organization system"
- 32% negative thematic correlation between SJSU and the "indecisiveness" regarding the LMS

APPENDIX E. LMS PUBLIC FORUM REPORT: SAN JOSÉ STATE UNIVERSITY LEARNING  
MANAGEMENT SYSTEM SELECTION WEBSITE FEEDBACK: FACULTY, STAFF, AND STUDENT  
VOICES

## **San José State University Learning Management System Selection Website**

### **Feedback: Faculty, Staff, and Student Voices**

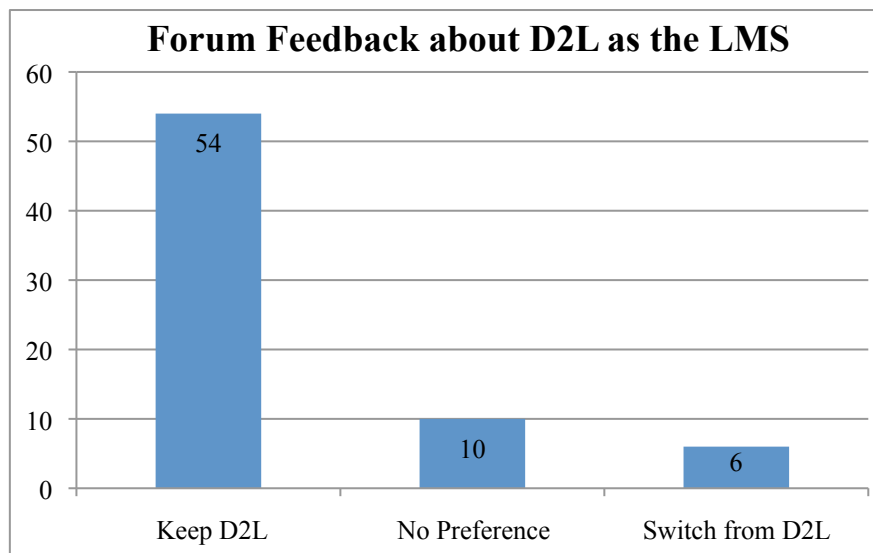
#### **Executive Summary**

- Campus community feedback about the selection of a new Learning Management System (LMS) at San José State University (SJSU) was collected using an online forum.
- There were 71 responses from faculty/staff and students as of April 16, 2012.
- From these responses, 77% were in favor of keeping D2L, 9% were interested in pursuing a different LMS, and 14% did not state a preference.
- The forum feedback fell into seven categories: time, multiple LMS in a short time span, cost, D2L positive aspects, areas for improvement in teaching and learning with D2L, change and commitment, and hassle to learn.
- Faculty and students alike felt their time and the hassle involved with learning something new should be a major consideration when investigating the selection of a new LMS.
- Responses suggested the impact the frequent change (i.e., every few years) of the LMS at SJSU can lead to a lower adoption level and lack of motivation to use the technology to enhance their teaching.
- If a new LMS was selected, a commitment must be made to use this LMS for a period longer than a few years.
- Responses articulated positive features of D2L (i.e., easy to learn and use) as well as areas where the use of D2L could be improved (i.e., lack of consistency across courses and uninviting tools).

## Introduction

San Jose State University is in its third year of its three-year contract with Desire2Learn (D2L), the LMS vendor. The contract with D2L expires June 30, 2012. Given this juncture, the Provost appointed a 35-person committee tasked with making a decision regarding the recommendation of an LMS going forward. For those SJSU campus community members not on the committee, a forum was created to provide an outlet for their thoughts and feedback regarding this upcoming selection.

Using an online discussion forum, Proboards, feedback was collected from 71 campus community members as of April 16, 2012. Of the 71 unique participants, 59 were faculty/staff, 11 were students, and 1 remained anonymous. The feedback from these participants was organized into three categories: in favor of keeping D2L (n=54), in favor of switching from D2L (n=6), and no preference about staying with D2L or not (n=10) (See Figure 1).



*Figure 1.* Forum Feedback about D2L as the LMS

### **In Favor of Keeping D2L**

Of the 54 participants who preferred that SJSU continue with D2L as their LMS of choice, five of these participants were students. The responses from the 54 participants that wish to continue with D2L were happy with the LMS due to its excellent platform, flexibility, and manageability as well as its features. A student went on to state that he/she did not understand how leaving D2L would be good for anyone since a change would cost the university time and money. One of the faculty reported that there had never been a high-adoption rate in their 20+ years of teaching at SJSU. Overall, 77% of those who participated in the feedback forum preferred that SJSU continue with D2L as their LMS.

### **In Favor of Switching from D2L**

Six of the feedback forum participants preferred to move on to a new LMS for a number of reasons. Some of these participants reported that D2L was awkward and disliked it because it was difficult to create or update quizzes. One of the faculty/staff who did not want to stay with D2L specifically asked that a change be made to BlackBoard (BB). Of these six participants, two identified as students and one did not identify with either category. One of the students preferred a move to BB based on his/her experience in using this LMS at a different institution. Another student had used a number of LMS's (including D2L, BB, and Moodle) and preferred Etudes over any of them. The one participant, who did not self-identify, preferred Moodle. Approximately, 9% of the responses were in favor of switching from D2L.

### **No Preference about Staying with D2L or Not**

Ten of the 71 participants (14%) did not state whether or not they preferred to stay with D2L or move to a different LMS. Instead, this group had a range of requests if a change to a new



LMS were to take place. Participants stated that they liked SJSU's current LMS, but were not opposed to a change if the new LMS had better capabilities (including operational costs) and was an easy transition. Also, there were those who preferred to go with the least expensive and most reliable LMS, but in turn spend the savings on supporting faculty development. Lastly, it was emphasized that every effort be made to include student input and find an LMS that the university would commit to staying with.

### Categories of Feedback

From the feedback provided on the forum, the text was analyzed and categorized based upon the content. Seven key areas of feedback emerged from these postings (in descending order): *Time*, *Multiple LMS in a Short Time Span*, *Cost*, *D2L Positive Aspects*, *Areas for Improvement in Teaching and Learning with D2L*, *Change and Commitment*, and *Hassle to Learn* (See Figure 2). Many forum entries included comments that fell into multiple categories, which why the number of responses reported exceeds the number of respondents.

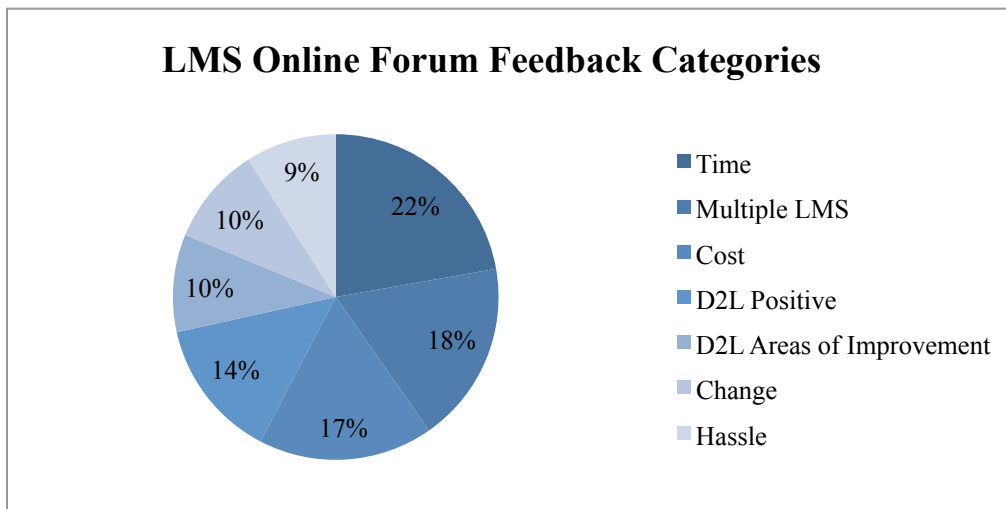


Figure 2. LMS Online Forum Feedback Categories

## **Time**

Based upon forum feedback, *Time* was the area of greatest concern (n=32) when contemplating the prospect of adopting a new LMS. Faculty members stressed the amount of time they have already spent in learning D2L and have just recently reached a level of comfort. Many noted that it took approximately two semesters to gain a level of comfort to where they can take advantage of more features and do more things within the learning environment. The prospect of having to learn another system in such a short time span from adopting D2L is not appealing. Many faculty members noted the time and energy they spent/will spend on learning a new system needs to be taken into account when contemplating the transition to a new LMS. They have reflected upon the previous transition, for example from BB to D2L, and felt that was labor intensive and time consuming. The adoption of a new LMS requires countless hours training oneself as well as training the students. It involves extra time to attend classes/workshops to learn about the LMS, which cuts into teaching, research, and scholarship time. Also, time is something that many part-time faculty members with other jobs do not have to spend on these activities. It was also noted that number of hours spent training, developing support materials, workshops, and instructional design work will all need to be taken into account in the amount of time necessary to make a transition to a new LMS. Students found the transition from one LMS to another to be time consuming requiring exporting, importing, and re-formatting their materials. Students also felt that their time is valuable and there needs to be consistency and predictability within the LMS, so they do not waste time searching for information.

## **Multiple LMS**

The second area of concern centered on the transition from multiple LMSs in a very short time span (n=26). Multiple faculty members and students alike stressed that even though they have only been at the university for a short period of time, they have already used Angel, BB, WebCT, and D2L. They are frustrated with the switch every few years, which may lead to reluctance in adopting the use of a LMS in the future. The frequency of changing LMS is too much and many responses warn will be detrimental to encouraging widespread adoption across the SJSU campus. Students are concerned about having to learn another system. The feedback provided had an overwhelming sense that the transition to a new LMS in such a short time period will be met with difficulty in motivating faculty to take the time to learn it.

## **Cost**

The third area addressed by the forum entries involved the cost (both monetary and other) that are associated with the adoption of a new LMS (n=25). The respondents urged that all costs are deeply thought about. For example, starting up using a new LMS ever 2-3 years has a price. The faculty have spent countless hours integrating their course into D2L, developing documents, editing, hyperlinking, posting, adding, transferring, and infusing content, transferring, which all come at the cost of a faculty member's time. The money would be better spent providing appropriate training and support so that faculty can provide students with rich and useful D2L sites.

As one response noted, switching services costs time and money. The time it takes a faculty member and a student to transition and learn a new system needs to be accounted for. Another cost involves getting the staff to migrate to another platform and have the courses

accurately ported into the new system. Everyone would need to get retrained: students, faculty, staff, administrators, technology services, and web services.

With the prospect of moving toward an Open Source LMS, such as Moodle, as described in some on-campus meetings, some responses noted the hidden costs that were not mentioned. Moodle has many of the same functions (test, video, survey, and forum) as other systems but with a different user interface, user experience, customer service, custom integration and no license fee. It was noted there was a discrepancy between what was stated in meetings and what was shown in the LMS Selection Site Documents. This includes the cost of hiring IT developers (salary, pension, and health care) and the cost of providing 24/7 support for all faculty and students. This will also include the re-development of webinars, workshops, symposiums, and development programs. The prospect of switching LMS has already had an effect on the development of the Fall 2012 course schedule, and a respondent explained the administration needs to explore the ramifications the change would have on departments and programs.

### **Positive Aspects of D2L**

The forum responses articulated there were many positive aspects of D2L (n=20). Many felt D2L was easy to learn and use, for example it took less than two days for one respondent to develop a working familiarity. Students and faculty are able to do things without assistance, but when support was needed, help was readily available with staff being both helpful and approachable. In comparison to WebCT and BB, D2L was described as being better and easier. Students find D2L valuable and a useful communication tool. The use of a LMS allows for efficiency and convenience for teaching and learning.

### **Areas for Improvement in Teaching and Learning with D2L**

The forum also articulated there were many areas that could be improved associated with the teaching occurring through the use of D2L (n=14). Students found the lack of consistency across courses in the learning environment to be a hindrance. It was noted that many faculty may not have a full grasp on all of D2L's functionality, and thus the course design suffers. Students want to be able to access the course materials once a course has ended and easily have the ability to integrate it into an eportfolio. Also, specific features of D2L were considered uninviting, such as the blog, calendar, and discussion board. The completion of tasks required too many mouse clicks. Finally, it was noted that D2L should be improved for use on a variety of mobile devices.

### **Change and Commitment**

Another area of concern described in the forum postings related to the idea of change and a sense of commitment (n=14). Many respondents suggested there should be a 10-year commitment to D2L or to the next LMS if a new one is selected. Also, many respondents were open to change as long as the new selection is clearly better, costs significantly less, is effective and easy to use, functions better, and is determined there will be a smooth transition. The consensus was that there needs to be a commitment and reassurance toward faculty that whatever the next LMS is that will be introduced on campus will be used for a longer amount of time than just a few years. If not, it was suggested that many faculty may not see a point in starting to use it because there will be a transition to something new shortly thereafter.

### **Hassle**

The final category of feedback centered on the hassle entailed with abandoning the current LMS and adopting anew (n=13). Many suggested they have no interest in starting all

over again and adopting and learning new software. They would rather focus on improving their teaching, course content, and service to the university. The transition to a new system will cause a disruption for both students and faculty. One response explains that the move better be worth the disruption in terms of the new system having significantly better capabilities and the transition is done easily. It was also noted that the training and support necessary for the transition would produce an increase in the faculties' as they redevelop their courses. The end users – students, subsequently feel the burden of the hassle associated with a transition placed upon faculty.

### **Suggestions**

Some of the feedback provided on the forum did not fit into any specific category, but rather offered suggestions of criteria to take into account when considering a new LMS. For example, it was noted that before a decision is made, that students need the opportunity to provide their input. Another suggested that if the university wants to have full-adoption, then it should be required for all faculty to use the LMS to provide for a standard teaching-learning interface for all courses. Another suggested that courses should go paperless. Also, a couple of faculty members requested the refinement of MySJSU with easy add/drop options as well as a roster will face pictures. Another stated that the infusion of these technologies into teaching becomes restricted when faculty enter the SJSU courses that are not technologically equipped and are out-of-date.

### **Conclusions**

The learning management system selection forum provided an opportunity for campus community members to offer their thoughts and feedback on the topic. The responses came from

both faculty and students and centered around seven categories of feedback. These categories included: *Time, Multiple LMS in a Short Time Span, Cost, D2L Positive Aspects, Areas for Improvement in Teaching and Learning with D2L, Change and Commitment, and Hassle to Learn*. This information helps to categorize the concerns, thoughts, and recommendations of these campus community members that are not necessarily part of the formal committee making a recommendation to the Provost. The intention of summarizing the feedback is to accentuate the main areas of concern that these stakeholders have and make them well known to the committee members, Provost, and SJSU as a whole.

## APPENDIX F. LMS EVALUATION RUBRIC



	Blackboard	Canvas	Desire2Learn	Moodle
Areas of Consideration	Doesn't Meet Meets Exceeds Superior Ease of Use* Importance: L, M, H**	Doesn't Meet Meets Exceeds Superior Ease of Use* Importance: L, M, H**	Doesn't Meet Meets Exceeds Superior Ease of Use* Importance: L, M, H**	Doesn't Meet Meets Exceeds Superior Ease of Use* Importance: L, M, H**
<b>Teaching and Learning Features</b>				
Announcements Assignment Dropbox Blog Calendar Chat (instant messenger) Content repository (course file storage) Discussion boards Email Groups Quizzes Rubrics Survey Wiki				
<b>Teaching and Learning Content Features</b>				
Ability to shift roles (instructor/student) Content management (flexibility of organizing content materials) Eportfolio File types supported Learning module design flexibility Multi-language Multimedia (audio, graphics, images, video) Built in Voice Board (post audio discussions) Web-design tools (html editor) Web linking outside the LMS				

<b><i>Teaching and Learning Grade Features</i></b>				
Customizeability of gradebook				
Discussion grading (sorting)				
Flexibility of views of gradebook				
Import/export to Excel				
Instructor feedback tool				
Peer view for assignment submissions				
Revise rubrics once created				
View student progress				
<b><i>Teaching and Learning Quiz Features</i></b>				
Integration with assessment tools for creating and managing exams				
Import publisher developed quizzes				
Import/export quizzes				
Password protection for proctoring quizzes				
Question pool management				
Randomize question and/or answer order				
<b><i>Security</i></b>				
Plagiarism detection software integration				
Secure guest access				
Secure testing (time constraints/lockdown browser)				
<b><i>Accessibility</i></b>				
508 Compliance				
Accessibility checker (plug in, app, tool)				
National Federation of the Blind Certified				
<b><i>Support</i></b>				
Course import/export/copy				
Online community support				
Technical support references				

Timely support and response				
Tutorials (videos and documentation)				
<b><i>Collaboration</i></b>				
Cloud storage - share materials between people and courses				
Mobile device compatibility (Smartphone, iPad, etc...)				
Social networking (ability to integrate/receive updates Twitter, etc...)				
Web-conferencing/synchronous tools				
<b><i>Analytics</i></b>				
Integrated learning outcomes				
Reporting				
Reporting on student interaction				
Tracking reports				
User statistics				
<b><i>Technical Specifications</i></b>				
Ability to migrate from existing lms (migration path)				
Access to the source code				
Automatic peak load management				
Backup and restore options				
Development technology				
Integrate with campus systems for single sign-on login				
Native cloud service				
Scalability				
Software licensing				
Stability				
Web resources and open API				
<b><i>Additional Top-Level Faculty Needs</i></b>				

Automatic saving				
Automatic support for students with disabilities				
Create or move features in bulk				
Easy to navigate				
Open multiple tabs simultaneously				

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* Ease of	Importance
Use Scale	scale
1=not easy	L=Low
5=very	M=Medium
easy	H=High

## APPENDIX G. COST ANALYSIS

See the following pages for spreadsheets of estimated hard and soft costs. These numbers represent *estimates* of the costs involved and the recommended measures to support a transition.

See an [Excel version of the spreadsheets](#) which includes comments for cells to provide additional information.

<b>Hard Cost Categories (current May 10, 2012)</b>	<b>D2LY1</b>	<b>D2LY2</b>	<b>D2LY3</b>	<b>D2LY4</b>
<b>Learning Management Site Environment</b>				
License (25,000 FTEs)	128,750	135,188	141,947	149,044
Hosting of production environment (25,000 FTEs)	113,000	118,650	124,583	130,812
Test or stage environment (25,000 FTEs)	4,500	4,658	4,821	4,989
System set-up (vendor configurations)	-	-	-	-
Discount	(10,000)	(10,000)	(10,000)	(10,000)
<b>Subtotal</b>	<b>236,250</b>	<b>248,495</b>	<b>261,350</b>	<b>274,845</b>
<b>Support Services</b>				
24/7 Administration support	20,500	20,500	20,500	20,500
End-user support (24/7) at 2400 incidents a yr.	46,000	36,000	36,000	36,000
Training services provided by faculty-in-residence	41,139	41,139	41,139	41,139
<b>Subtotal</b>	<b>107,639</b>	<b>97,639</b>	<b>97,639</b>	<b>97,639</b>
<b>Functional and 3rd Party Integration</b>				
SIS integration maintenance (PeopleSoft)	5,000	5,250	5,513	5,788
<b>Subtotal</b>	<b>5,000</b>	<b>5,250</b>	<b>5,513</b>	<b>5,788</b>
<b>Data Migration and Archiving</b>				
Course conversion (faculty incentive)	-	-	-	-
Course conversion consulting (Canvas)	-	-	-	-
Course conversion (student assistants)	-	-	-	-
D2L archive set-up and maintenance	-	-	-	-
<b>Subtotal</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Products</b>				
ePortfolio	93,750	98,438	103,359	108,527
<b>Subtotal</b>	<b>93,750</b>	<b>98,438</b>	<b>103,359</b>	<b>108,527</b>
	<b>D2LY1</b>	<b>D2LY2</b>	<b>D2LY3</b>	<b>D2LY4</b>
<b>Yearly Totals</b>	<b>442,639</b>	<b>449,822</b>	<b>467,861</b>	<b>486,800</b>
<b>TOTAL "HARD" DOLLAR COSTS</b>				
<b>TO KEEP D2L</b>	<b>1,847,121</b>			
<b>TO CHANGE TO CANVAS</b>	<b>1,986,700</b>			
Amount of Increase in Costs over 4 years to SJSU of Transitioning to Canvas (actual dollars):	<b>139,579</b>			
Percent Increase in Costs over 4 years to SJSU of Transitioning to Canvas:	<b>8%</b>			

## Hard costs (continued)

[illegible]



[illegible]

## Soft costs continued

[illegible]

HARD COSTS					
LMS Option	Year 1	Year 2	Year 3	Year 4	Total
Remain with Desire2Learn	442,639	449,822	467,861	486,800	1847121
Transition to Canvas	825,385	462,297	349,509	349,509	1986700
Difference (Remain D2L-Transition Canvas)	382,746	12,476	-118,352	-137,291	139,579
Percentage Difference (Remain D2L-Transition Canvas)	86%	3%	-25%	-28%	8%
SOFT COSTS					
LMS Option	Year 1	Year 2	Year 3	Year 4	Total
Remain with Desire2Learn	610,080	10,080	7,740	7,740	635640
Transition to Canvas	1,904,881	19,620	10,260	7,920	1942681
Difference (Remain D2L-Transition Canvas)	1,294,801	9,540	2,520	180	1,307,041
Percentage Difference (Remain D2L-Transition Canvas)	212%	95%	33%	2%	206%