

# **COSC 3p94 - Stage 1**

*Learning Management System Development*

Zain Alqudah  
Kyle Giammarco  
David Cheong

**March 2, 2020**

# Contents

<b>1</b>	<b>User Requirements</b>	<b>3</b>
1.1	The role of each actor . . . . .	3
1.2	Security . . . . .	3
1.3	What services are presented . . . . .	3
1.4	Navigation . . . . .	4
1.5	User Input . . . . .	4
1.6	Personalization Tools . . . . .	4
1.7	Organization and Layout . . . . .	4
1.8	User Experience . . . . .	4
<b>2</b>	<b>Existing Site Analysis</b>	<b>5</b>
<b>3</b>	<b>Control Map (HTA) and KLM Analysis</b>	<b>6</b>
<b>4</b>	<b>Existing Site Critique</b>	<b>8</b>
<b>5</b>	<b>Survey Results</b>	<b>10</b>
<b>6</b>	<b>User Goals</b>	<b>13</b>
<b>7</b>	<b>User Persona</b>	<b>13</b>
<b>8</b>	<b>Presentation</b>	<b>14</b>
<b>9</b>	<b>Storyboard</b>	<b>14</b>

## Section 1 User Requirements

### 1.1 *The role of each actor*

There are three main roles for each individual, student, instructor and admin. The actor can have any of these roles, and can have all of these roles. On initial setup a super admin will need to be assigned in order to give other actors their roles. A user is given a student role, once enrolled in a class. An instructor is given their role, once they are in charge of a course. And super admins and admins are the only ones able to give the admin role to others.

### 1.2 *Security*

There will be a main login for the individual, with no roles presented to them until given to them by someone with more permissions. Instructors and Admins can make courses, and add people to those courses. Admins can add an individual to a course as an instructor and give admin privileges to a user. Admins with the permission to take away permissions from a user are denoted as SuperAdmins, and are the only ones able to demote a user. A user can hold many roles, and is not limited to only being a student or instructor or admin. A instructor can have the student role as well, as well as an admin can have instructor role as well.

### 1.3 *What services are presented*

There are many features available in modern learning management systems. The services present within our new implementation takes inspiration from these other solutions and intends to implement them in a more seamless manner to the end user.

The services are as follows (those with emphasis are most important according to our surveys):

- User - Profile
  - Name
  - Bio
  - Settings
    - \* Theme (Light|Dark)
    - \* Font and Font Size
  - Date of Birth
- Course
  - Name
  - Description
  - Teachers
  - **Assignments**

- **Documents**
  - Forums
  - Quizzes
  - **Assignments**
  - **Grade Reporting**
- Calendar

## 1.4 *Navigation*

Navigation through the site will be mainly through a header that contains the courses the individual has access to, with sections and subsections for those courses on a sidebar. Settings for the individual will be accessed through the profile image on the top right. With more advanced administrative tools available on the right for those that have permissions.

## 1.5 *User Input*

The site will be accessible through either keyboard and/or mouse, with appropriate compatibility for mobile and touch screens.

## 1.6 *Personalization Tools*

There will be a couple options in the way of personalization tools. The user will be able to choose between two preset themes, either a light theme and a dark theme. The font used by the website can also be chosen, from a list of preset fonts that are supported.

## 1.7 *Organization and Layout*

If the user is not logged in, the site will prompt the user with a login/register screen on the right, with announcements for the school on the left. Once the user is logged in, they are shown a main page, similar to that of the storyboard (Section 9). This page links into all the main features of the site, including a calendar, access to their courses and their own profile.

## 1.8 *User Experience*

The user experience is an important factor that needs to be addressed. Using the feedback from the survey and empathising with the users we will be able to create a seamless experience that is pleasant to interact with. An HTA analysis of our own site will allow us to keep everything that is important within access, but still have an uncluttered and distraction free interface.

## Section 2 Existing Site Analysis

D2L and Sakai are similar websites but have some significant design differences. From a visual point of view, Sakai has more of a structured approach while D2L has more of a flowing design. There's much more notification icons, buttons, and progress bars in D2L which help the student figure out what assignment or course is more pressing.

Practically, D2L and Sakai serve the same function, but they differ in how they allow the user to use those features and what kind of feedback they receive. Both D2L and Sakai have a profile/portfolio feature where you can add information about yourself and add others. That feature is not the most useful as most students will not use it. The D2L e-portfolio feature is a bit more practical as it allows you to show off your work rather than Sakai's social features which only allow you to post on your wall. D2L allows for more personalization in terms of what data is displayed. Things like the calendar, announcements, and course contents are much more thorough and customizable. This makes them more useful and impactful for the user.

Course content is compartmentalized further in D2L compared to Sakai. Course content, assignments, links, weekly materials, etc. all have their own tabs with direct links to the content, and a progress bar to show how much of that content has been consumed/finished. D2L also has a Quick Tools section that allows easy access to summarized information like grades and submissions.

Other than that, the rest of the features are basically the same. They both have group features where you can manage and search for groups to join. Resources are available to users on both websites to manage and access. Both home menus contain an overview of all the important information for the user.

**Brock** University
 
[🔍 Search](#) | 
 [📄 Sites](#) | 
 [👤 Kah](#)

---

Home ▾
IASC 4P02 ▾
COSC-3P91-D03-S01-2020 ▾
IASC 3P06: Game Criticism ▾
COSC-4P82-D02-S01-LEC ▾
COSC-1P50-D02-Fall-2019-BLD ▾
IASC-4F03-D01-LEC-2019 ▾

---

## OVERVIEW

Message Of The Day [🔗 Link](#) [? Help](#)

Options

**Students, have your say!**

Take the 20-minute National Survey of Student Engagement (NSSE) for first-year and senior Brock University students.

Watch your Badger account for emails from NSSE

**Win Prizes!**

You could win one of two sets of **Apple AirPods Pro**, or one of fifteen **\$50 Amazon gift cards**.

Calendar [🔗 Link](#) [? Help](#)

[Options](#) | [Publish \(private\)](#)

**March 2020** < Today >

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4

Recent Announcements [🔗 Link](#) [? Help](#)

**Announcements**

(viewing announcements from the last 10 days)

```

graph TD
    Root1[0 2.99  
Enter Class Site] --> Plan0_1[Plan 0  
Choose One]
    Plan0_1 --> C1_1[0.1 2.94  
By Mouse]
    Plan0_1 --> C1_2[0.2 4.05  
By KBD]
    C1_1 --> C1_1_1[0.1.1 3.75  
Regular]
    C1_1 --> C1_1_2[0.1.2 2.55  
Using Favorites]
    C1_2 --> C1_2_1[0.2.1 5.5  
Regular]
    C1_2 --> C1_2_2[0.2.2 3.35  
Using Favorites]
    Plan0_1 --> Plan0_1_1[Plan 0.1  
Choose One]
    Plan0_1 --> Plan0_1_2[Plan 0.2  
Choose One]
    Plan0_1_1 --> C1_1_1
    Plan0_1_1 --> C1_1_2
    Plan0_1_2 --> C1_2_1
    Plan0_1_2 --> C1_2_2

    Root2[0 2.74  
Enter Calendar] --> Plan0_2[Plan 0  
Choose One]
    Plan0_2 --> C2_1[0.1 2.55  
By Mouse]
    Plan0_2 --> C2_2[0.2 6.35  
By KBD]
    C2_1 --> C2_1_1[0.1.1 2.55  
By Mouse]
    C2_1 --> C2_1_2[0.1.2 6.75  
By KBD]
    C2_2 --> C2_2_1[0.2.1 2.55  
By Mouse]
    C2_2 --> C2_2_2[0.2.2 6.75  
By KBD]
    Plan0_2 --> Plan0_2_1[Plan 0  
Choose One]
    Plan0_2_1 --> C2_1_1
    Plan0_2_1 --> C2_1_2
    Plan0_2_1 --> C2_2_1
    Plan0_2_1 --> C2_2_2

    Root3[0 2.55  
Enter Announcements] --> Plan0_3[Plan 0  
Choose One]
    Plan0_3 --> C3_1[0.1 2.55  
By Mouse]
    Plan0_3 --> C3_2[0.2 2.55  
By KBD]
    C3_1 --> C3_1_1[0.1.1 2.55  
By Mouse]
    C3_1 --> C3_1_2[0.1.2 6.75  
By KBD]
    C3_2 --> C3_2_1[0.2.1 2.55  
By Mouse]
    C3_2 --> C3_2_2[0.2.2 6.75  
By KBD]
    Plan0_3 --> Plan0_3_1[Plan 0  
Choose One]
    Plan0_3_1 --> C3_1_1
    Plan0_3_1 --> C3_1_2
    Plan0_3_1 --> C3_2_1
    Plan0_3_1 --> C3_2_2

    Root4[0 2.76  
Enter Preference] --> Plan0_4[Plan 0  
Choose One]
    Plan0_4 --> C4_1[0.1 2.55  
By Mouse]
    Plan0_4 --> C4_2[0.2 6.75  
By KBD]
    C4_1 --> C4_1_1[0.1.1 2.55  
By Mouse]
    C4_1 --> C4_1_2[0.1.2 6.75  
By KBD]
    C4_2 --> C4_2_1[0.2.1 2.55  
By Mouse]
    C4_2 --> C4_2_2[0.2.2 6.75  
By KBD]
    Plan0_4 --> Plan0_4_1[Plan 0  
Choose One]
    Plan0_4_1 --> C4_1_1
    Plan0_4_1 --> C4_1_2
    Plan0_4_1 --> C4_2_1
    Plan0_4_1 --> C4_2_2

    Root5[0 2.78  
Enter Dropdown] --> Plan0_5[Plan 0  
Choose One]
    Plan0_5 --> C5_1[0.1 2.55  
By Mouse]
    Plan0_5 --> C5_2[0.2 7.15  
By KBD]
    C5_1 --> C5_1_1[0.1.1 2.55  
By Mouse]
    C5_1 --> C5_1_2[0.1.2 6.75  
By KBD]
    C5_2 --> C5_2_1[0.2.1 2.55  
By Mouse]
    C5_2 --> C5_2_2[0.2.2 6.75  
By KBD]
    Plan0_5 --> Plan0_5_1[Plan 0  
Choose One]
    Plan0_5_1 --> C5_1_1
    Plan0_5_1 --> C5_1_2
    Plan0_5_1 --> C5_2_1
    Plan0_5_1 --> C5_2_2

    Root6[0 2.83  
Enter Profile] --> Plan0_6[Plan 0  
Choose One]
    Plan0_6 --> C6_1[0.1 3.76  
Profile Icon]
    Plan0_6 --> C6_2[0.2 2.73  
SideBar]
    C6_1 --> C6_1_1[0.1.1 3.75  
My Mouse]
    C6_1 --> C6_1_2[0.1.2 4.1  
By KBD]
    C6_2 --> C6_2_1[0.2.1 2.55  
By Mouse]
    C6_2 --> C6_2_2[0.2.2 6.15  
By KBD]
    Plan0_6 --> Plan0_6_1[Plan 0.1  
Choose One]
    Plan0_6 --> Plan0_6_2[Plan 0.2  
Choose One]
    Plan0_6_1 --> C6_1_1
    Plan0_6_1 --> C6_1_2
    Plan0_6_2 --> C6_2_1
    Plan0_6_2 --> C6_2_2

    Root7[0 2.79  
Enter Help Menu] --> Plan0_7[Plan 0  
Choose One]
    Plan0_7 --> C7_1[0.1 2.55  
By Mouse]
    Plan0_7 --> C7_2[0.2 7.35  
By KBD]
    C7_1 --> C7_1_1[0.1.1 2.55  
By Mouse]
    C7_1 --> C7_1_2[0.1.2 6.75  
By KBD]
    C7_2 --> C7_2_1[0.2.1 2.55  
By Mouse]
    C7_2 --> C7_2_2[0.2.2 6.75  
By KBD]
    Plan0_7 --> Plan0_7_1[Plan 0  
Choose One]
    Plan0_7_1 --> C7_1_1
    Plan0_7_1 --> C7_1_2
    Plan0_7_1 --> C7_2_1
    Plan0_7_1 --> C7_2_2

    Root8[0 2.7  
Enter Membership Mer] --> Plan0_8[Plan 0  
Choose One]
    Plan0_8 --> C8_1[0.1 2.55  
By Mouse]
    Plan0_8 --> C8_2[0.2 6.95  
By KBD]
    C8_1 --> C8_1_1[0.1.1 2.55  
By Mouse]
    C8_1 --> C8_1_2[0.1.2 6.75  
By KBD]
    C8_2 --> C8_2_1[0.2.1 2.55  
By Mouse]
    C8_2 --> C8_2_2[0.2.2 6.75  
By KBD]
    Plan0_8 --> Plan0_8_1[Plan 0  
Choose One]
    Plan0_8_1 --> C8_1_1
    Plan0_8_1 --> C8_1_2
    Plan0_8_1 --> C8_2_1
    Plan0_8_1 --> C8_2_2
  
```

6

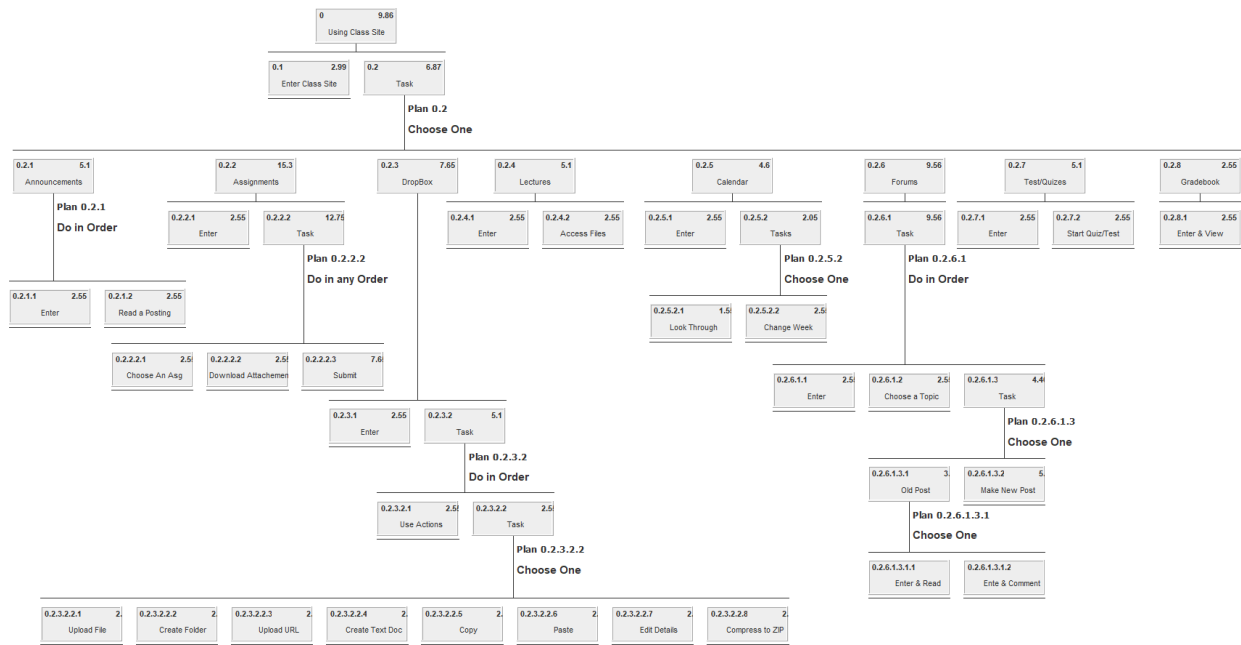


Figure 3: Sakai Class Tools Analysis

RTA212 021/FRI - Media Writing - W2020

Razan Marachli

Content
Grades
Assessment
Communication
Resources

Announcements
Week #8 Update
Posted Mar 1, 2020 9:57 AM

The course documents for week 8 are now available on D2L. There you'll find:

- a copy of my lecture notes
- a document that describes the beat sheet format
- a copy of the beat sheet for the *Pretty Woman* scene that we discussed in class
- a sample beat sheet
- and an article on the art of plotting (highly recommended that you read this).

Let me know if you have any questions.

Selected Adaptation Proposals

Course Outline Academic Policies
About Copyright

Calendar
Monday, March 2, 2020
Upcoming events
There are no events to display.

Figure 4: D2L Landing Page

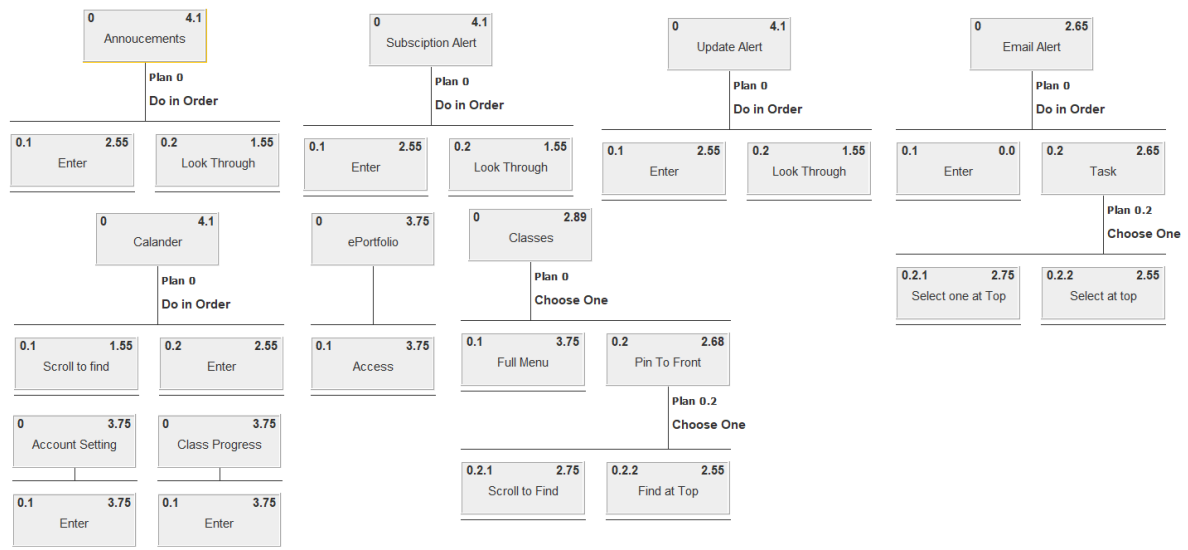


Figure 5: D2L Action Function Analysis

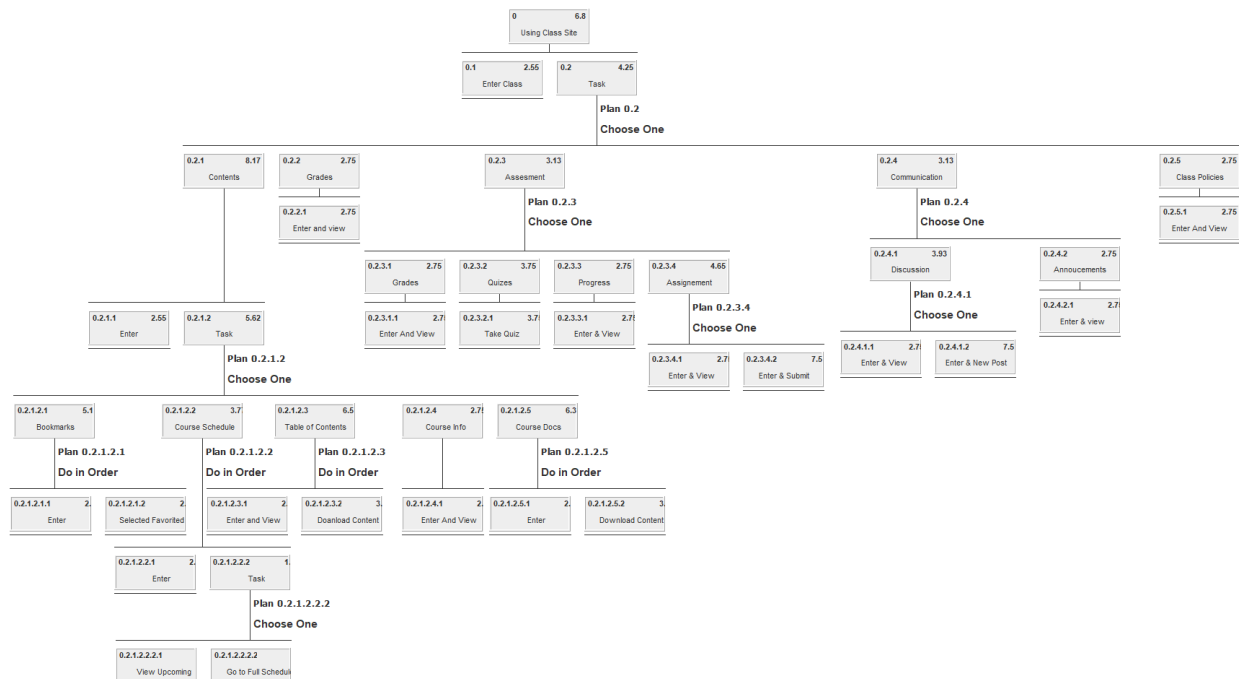


Figure 6: D2L Class Tools Analysis

## Section 4 Existing Site Critique

When looking at the Features presented by both Sakai and D2L's homepage, we can find many similarities as they both serve as learning softwares. (Class Details, Profile settings, Alerts,



Calendar ... etc); This is to be expected. However, Due to the way things are laid out in D2L, a user can hardly access everything without having to scroll at least once to find their desired functionality. This can prove to be cumbersome over time, especially when just trying to access a feature on another page. Hence, we concluded that having at least the links to other functionality all in the very top and immediately accessible to be very important.

Taking a deeper dive into the functionality of specifically the class features, once again we can find on the surface level that they both provide very similar tools. (Announcements, Assignments, Grades, Forums, Class info). There are slight differences in how one access each subfolder. Sakai has it where one clicks on the sidebar to the left, then the window changes to provide a new list of functionality. D2L on the other hand has drop down menus on the top of the page, in which can be expanded to find the specific tool that the user wishes to access. Even with this difference, as long as the user's internet speed is adequate, the KLM analysis has proven that the time it takes to access the same features have a negligible difference.

A feature that Sakai Specifically has that D2L has is the dropbox. While speaking with people that have taken our survey, we have gathered that over all people have deemed that that functionality is often necessary or not used to the full potential, as it is often just used as a replacement to the Assignment submission, leading to redundancy. A similar trait to its homepage, D2L once again has very large text and info boxes. This helps viewability, but each page can get extremely long, sometimes taking multiple scrolls before reaching the bottom. In terms of getting to class documents, such as TLP, lecture notes, assignment details, Sakai tends to have things separated in their respective sections. D2L instead has them all under a "Contents" folder allowing for quicker access to all of the documents related to a class. By reducing organization, it increases access speed. In our surveys we have seen a number of complaints towards having slow access times, and we deemed that such a sacrifice would be worthy to pursue.

Looking over to Forums, it seems that it is more utilized in Sakai than D2L. However, in further inspection that may just be a preference thing. The time it takes to make a new post, comment on a post, or edit a post all seem to be relatively similar. The fact that in Sakai, students can start their own discussion groups may be what the difference in use amount lies on. As D2L students cannot start their own posts. Other communication tools include the announcements. This tool is extremely similar on both sites. There are alerts in the top right corner for both sites, and the most recent announcements are displayed on the front page of each class. However, where Sakai has a limit to how many announcements it can show, before the user needs to hit a button to see more. D2L decides to stack every announcement where scrolling is all that's necessary to view more.

Overall, both sites have extremely similar functionality and the steps it to do certain tasks are not too far off from each other. There are definitely advantages like more quick access tools from D2L that we are going to learn from to improve and build from for our own sites.

## Section 5 Survey Results

1. What learning management systems have you used?

● Sakaai (Brock)	15
● Blackboard (Niagara College)	11
● D2L (Ryerson)	3
● Other	8



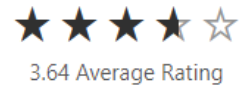
2. What is your role in the system?

● Student	25
● Teacher	1
● Administrator	1
● Other	0

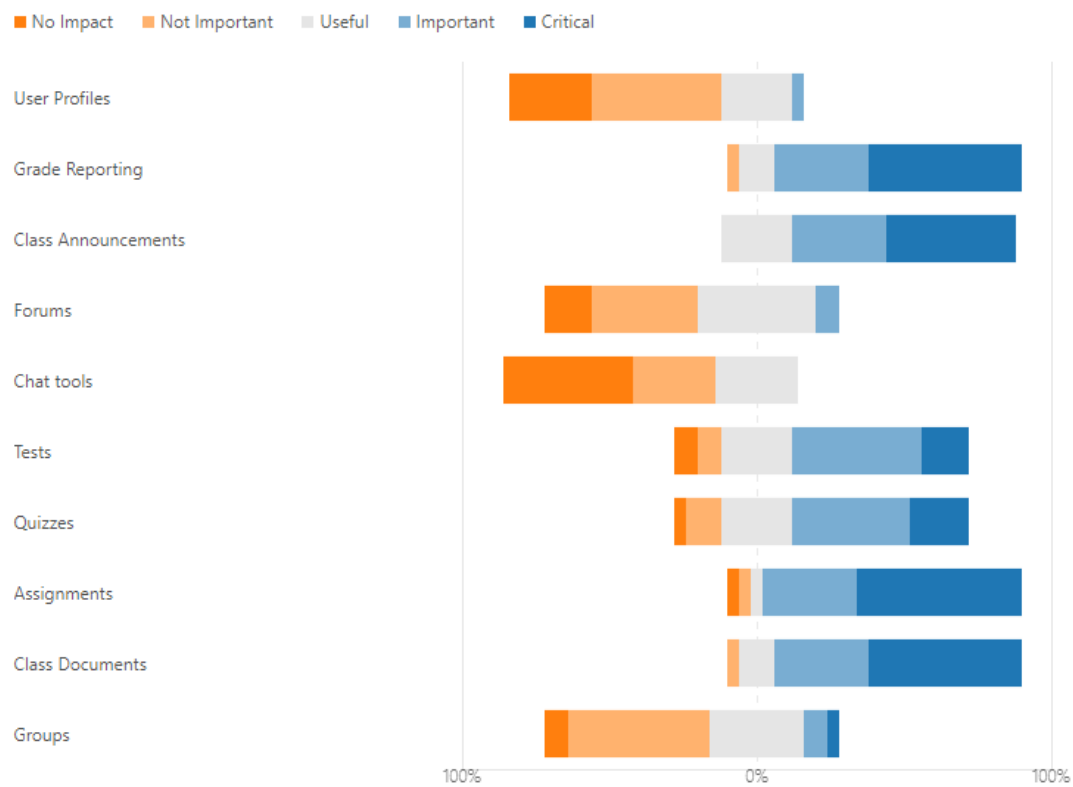


3. How has your experience been with learning management systems?

25  
Responses



#### 4. How important are certain features to a learning management system



#### 5. What features would you like featured in a learning management system, that is not available above?

25  
Responses

Latest Responses

"quick access tools"

"Polls"

"None"

#### 6. What would you improve with the learning management systems that you have used?

25  
Responses

Latest Responses

"better graphics"

"The less hierarchy there is, the faster i can get to stuff. "

"Have a mobile app available "

7. What input methods are needs to be available?

Mouse	20
Keyboard	22
Voice	6
Eye-tracking	2
Other	0



8. Is 2FA (Two Factor Authentication) Important?

Yes	3
No	6
As long as it's optional	16



9. What are common frustrations you have experienced?

25  
Responses

Latest Responses  
"bad graphics"

"In sakai, sometimes the back button doesn't actually work due to the..."  
"Not being able to login on my mobile phone "

10. Would you prefer if password changes were not mandatory

Yes	12
No	4
Only reminders	9
Other	0



11. Would you like notifications for new content

Yes	11
No	4
Only within site	5
Send to email as well	5
Other	0



---

12. Would you like the option to favourite courses, to have them appear more central?



---

To view the survey, go to <http://lms.survey.giammar.co> and to see the up-to-date responses, go to <http://lms.results.giammar.co>

## Section 6 User Goals

According to the survey there are many things that are important across a large amount of the people surveyed. We can take these things to be the main common goals of the users and what they are looking for. It is important to users that there are a place for announcements, a way for the instructor to make a bulletin for all individuals within the class, with possible notifications for such. Grade reporting is a must, as it allows the user to evaluate their success within the class and how to move forward with unexpected results. A place for class documents is important, as a way for the instructor to upload class information including lecture slides and syllabus and miscellaneous other documents. A way for assignments to be submitted online, with a central location across all courses. A calendar with important dates for all courses the individual is enrolled in would make the experience much nicer. Direct communication toward the professor and/or teacher assistants within the app would be a nice add. A better unified user experience between courses and content would make the lives of the users better.

## Section 7 User Persona

**The primary persona is as follows:** A student attending a post-secondary institution (in the ages 18–23) that uses the site for academic purposes. They want to have a site that allows them to work easily and efficiently and be able to properly plan their life around the work that needs to be achieved. They want to be able to easily get around the site and get to where they need to be without getting lost. Viewing grades are a must as it is important to them that they get the best mark possible within the course.

**The secondary persona is as follows:** A instructor at a post-secondary institution that is dissatisfied at the other learning management sites. They want to easily present their content to the student that way that they feel is best. They have felt constrained from previous implementations and hope that this one allows them to do what they want. Otherwise, they will be forced to continue to make raw html websites using word.

Both of these personas are dis-satisfied with the current implementation of other learning management systems and are looking for better solutions. A system that is built from the ground up for students and instructors, allowing a seamless, customizable, yet fluid organizational structure for all users.

## Section 8 Presentation

The content will be displayed as a web app. This allows the content to be viewable on a wide range of devices including mobile and desktop. Since this is a web app, it will reflow intelligently for the device it is being used on.

If there is sufficient demand, the app can be bundled into 'native' applications using the web app ui.

## Section 9 Storyboard

