# University of Windsor

# LMS Review 2021Environmental Scan

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# Overview

## Rationale

A Learning Management System (LMS) Review is taking place at the University of Windsor because the University's current LMS vendor, Blackboard, has announced that it will not allow self-hosting past 2023. This will prevent the University from hosting the LMS on its local servers and necessitate the LMS to be hosted on Blackboard's servers and the LMS to move to a software as a service (SaaS) model. There will be some immediate changes, especially on the administrative side, but further, Blackboard will eventually move away from Blackboard Learn Original (the current system at the University of Windsor) to Blackboard Learn Ultra which is very different from what University of Windsor faculty, staff, and students are used to. The LMS review encompasses many components including an environmental scan, Request for Proposals (RFP), focus groups, and surveys. In this document, the environmental scan will be discussed and presented.

Environmental Scanning is the ongoing tracking of trends in an organization's internal and external environment that bear on its success (Fordham University, n.d.). At the University of Windsor, it is being used to track trends in the LMS industry which can help the University compare the different potential LMS choices. Whether the University will be staying with Blackboard or changing to a new LMS, the environmental scan will be a good indicator of where the University of Windsor will be heading, and it will help the University community understand the system that is chosen.

## Process

The environmental scan evolved as the LMS review process continued and more information became available. Online research about LMS market trends and the different LMS's was ongoing throughout the LMS review process. Graphs, tables, reviews, and information were gathered from online resources and used to provide the reader an opportunity to understand the market. The feedback of faculty, staff, and students through surveys was also used in the environmental scan. Once preliminary data was gathered, it was analyzed and then summarized in the environmental scan. Analyzing the data included curating different tables, images and graphs that allow for a greater understanding of how the University community feels about the LMS's. The process of creating the Environmental Scan involved weekly meetings with the LMS Team, collecting information from LMS Team members, and research on the current LMS Market. The environmental scan first provides basic information on the available LMS's in the market and then a comparison between the different LMS's used by Canadian institutions is presented. Next, an analysis of the LMS market trends is shown, followed by a head-to-head comparison of Blackboard with each major potential LMS using online resources, surveys, and feedback from other institutions. Lastly, a summary of the overall environmental scan is given.

## Benefits of the LMS Review

There are several benefits to the LMS Review because it helps the University of Windsor decide on which LMS will be selected for the next few years. The LMS Review is a long and complex process, however, when done correctly and effectively it allows for an institution to gain a greater

understanding of the products in the market and to see if they can meet its needs and wants. The LMS Review will allow the University to use information from various sources, including faculty, staff, and students to reflect on the current system and to see if there is a different system that may better suit the needs of the University.

## Popular LMS Systems

In Table 1 below, a brief description of some of the most popular LMS Systems is provided.

Table 1

*Popular LMS Systems*

| Name | Hosting | Market | Information |
|---|---|---|---|
| Absorb LMS | Cloud | Organizational Training/ Business Management | Absorb LMS provides a course selling platform where courses can be created and sold within the system. Absorb LMS can accept payments through over 70 gateways and accepts multiple currencies. This LMS is directed towards businesses that specialize in compliance training, employee development and customer training. |
| Blackboard | Cloud, Self-Hosted (Being Phased Out) | K-12 & Higher Education | Blackboard is one of the oldest LMS's and it has many features specifically designed for higher education learning. Blackboard is known for having cumbersome user interface (UI) but the company has tried to rectify this problem by introducing an upgraded/modern UI in their BB Learn Ultra platform. Blackboard is moving away from allowing self-hosting to operate completely in a cloud environment. They are also eventually going to completely phase out BB Learn Original and move to BB Learn Ultra. |
| D2L Brightspace | Cloud | K-12 & Higher Education | D2L Brightspace is another LMS that has many features specifically geared towards higher education learning. Accessibility is a major focus of the company, and their goal is to make an LMS that is intuitive and easy to use for everyone. The LMS is also very mobile friendly. |
| Canvas | Cloud (Open Source) | K-12 & Higher Education | Canvas was created to be a Blackboard replacement, so the LMS is designed to provide functionality while also making |

| | | | |
|---|---|---|---|
| | | | it easy to use. Canvas is open source, but it is usually licensed through its parent company Instructure. |
| Docebo | Cloud | Organizational Training | Docebo is a LMS that caters towards the corporate world. It has a powerful Application Programing Interface (API). |
| Edmodo | Cloud | K-12 | Edmodo is an LMS designed for K-12 Learning, but it does have some features that are desired in higher education. One of these features is group messaging/information exchange. All users, including students, can set up their own groups to exchange messages with each other. |
| Moodle | Cloud, Self-Hosted (Open Source) | K-12, Higher Education, and Organizational Training | Moodle is an open source LMS that can be self-hosted and customized. The basic version of Moodle does not match up well with modern day LMS's, but plugins can be created or downloaded to enhance its functionality. Moodle can also be cloud hosted by a certified Moodle vendor. Moodle is very customizable, but it lacks a robust mobile app. |
| SAP Litmos | Cloud | Organizational Training | SAP Litmos is another LMS that Caters towards the corporate world. The LMS can easily be scaled for millions of users. |
| Schoology | Cloud | K-12 | Schoology is most often used in K-12 settings. It offers exceptional integration with Office 365. |
| Talent LMS | Cloud | Organizational Training | Talent LMS is another LMS that is used in the corporate world. It has a good assessment and survey system. |

Note: Adapted from (Gewirtz, 2022)

# LMS's used at Canadian Institutions

Figure 1 shows data about the LMS usage at 87 different Canadian higher education institutions, obtained through research by the LMS review team. Moodle is the leading LMS in these institutions with about 32% (28 institutions) of them using it. Brightspace follows closely behind with about 28.7% (25 institutions) of the market share in Canada. Moodle and Brightspace combined make up over 60% of the Canadian LMS market. This result may not be that surprising when it is considered that Brightspace is a Canadian made LMS and Moodle is usually less costly than other LMS's hence it is popular with smaller institutions.

## Figure 1

*Canadian Institution's LMS Comparison*
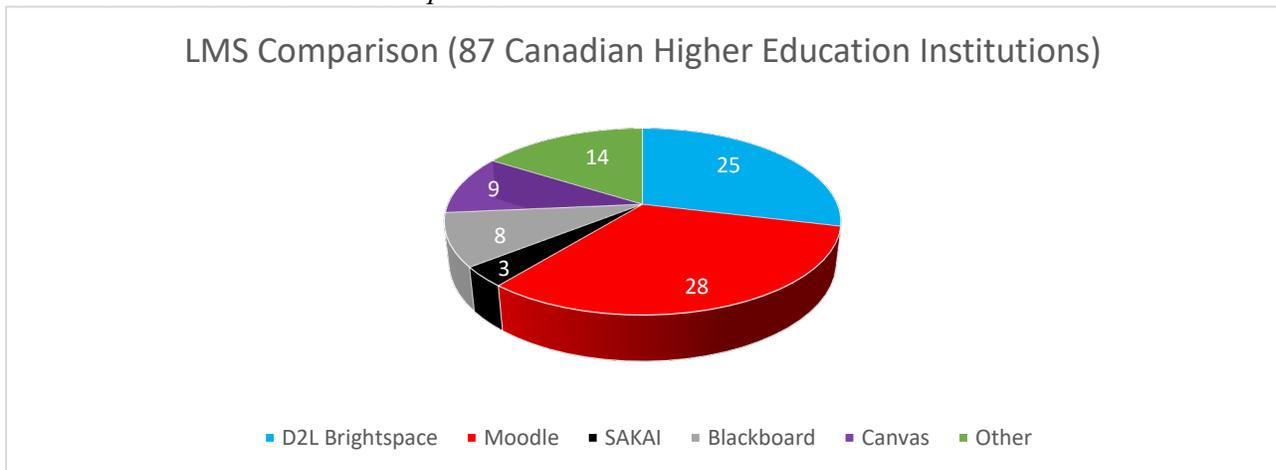


Figure 2 focuses on the Ontario higher education LMS market. In Ontario, Brightspace has the largest market share by a large margin. A notable result is that despite being relatively close in market share in Canada, Brightspace has more than 2.5 times the market share in Ontario when compared to Moodle.

## Figure 2

*Ontario Institution's LMS Comparison*
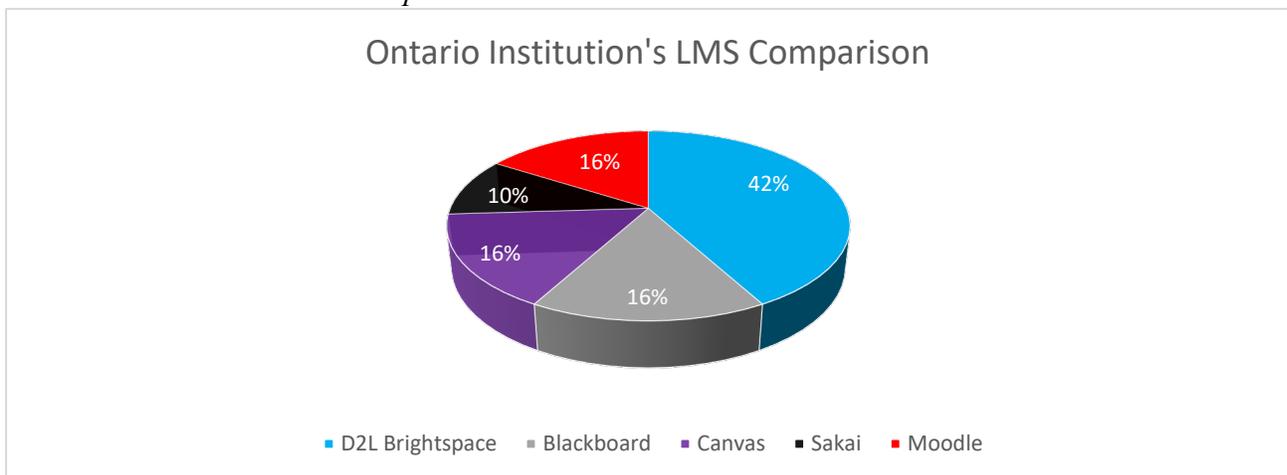
# LMS Market Trends

Figure 3 shows the LMS transitions occurring in North American institutions from 2019-2021. Figure 4 shows the North American LMS Market over time where the width of each band represents the percentage of institutions using one of these LMS's at a particular time. Looking at the chart in figure 3, the general trend for institutions switching LMS's is to move to Canvas. When looking at the squid diagram in figure 4, it is quite evident that Canvas has captured a significant share of the market since its inception in 2009. A notable point about Canvas is that it has not lost a single customer (PhilOnEdTech 2020). Another trend from figure 3 is that very few institutions are switching to Blackboard. In fact, Blackboard is losing many of its customers to Canvas and Brightspace. Blackboard's large share in the market is beginning to diminish according to figure 4, now that new and more modern LMS's are beginning to establish themselves in the market.

## Figure 3

*LMS Customer Migration for North America*
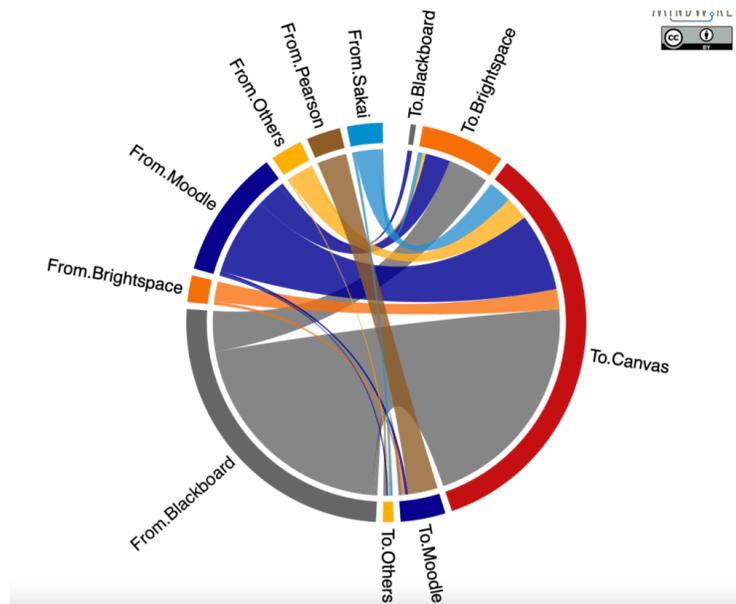


Note: Retrieved from (MindWires, 2020)

## Figure 4

*LMS Market Share For US & Canadian Higher Ed Institutions*
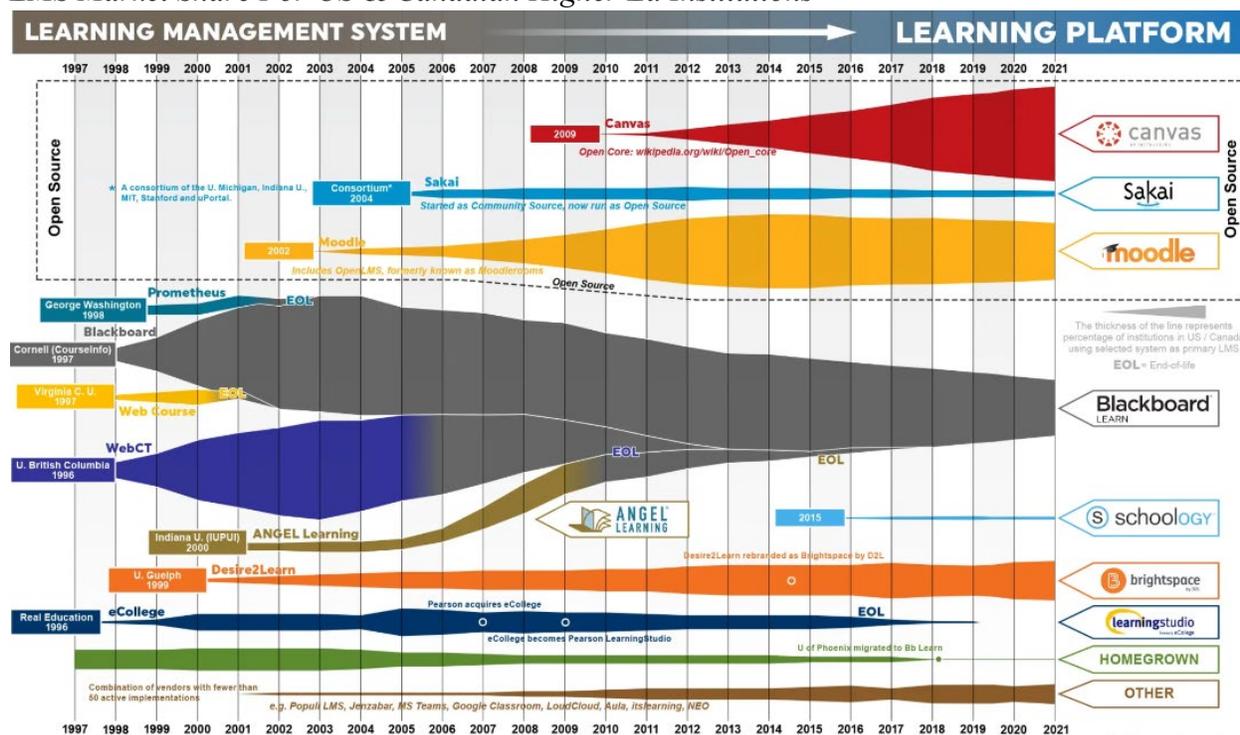


Note: Retrieved from (Hill, 2022)

Blackboard was the most dominant LMS in the industry for many years when they were buying their competition, but as of 2022 Canvas is the market leader in North America in terms of institution count at 34%, followed by Moodle at 21%, Blackboard has fallen to 20% and Brightspace is at 14% (Hill, 2022). In terms of enrollment, in 2020, Canvas lead with 39% of the market share, followed by Blackboard at 30%, D2l Brightspace was third with 16% and Moodle was fourth with 11% (Hill, 2020). This review confirms a statement made in the LMS's used at Canadian institutions section that claimed Moodle is mostly used in smaller institution with lower enrollment numbers.

# LMS Review Survey

## Identify the needs of the organization.

The University of Windsor's needs have been identified by looking at responses to the two surveys that were distributed as part of the LMS Review. The faculty/staff survey was different from the student survey because of the different needs of the groups. A selection of results and an analysis of some of the questions in the surveys is shown below.

## Faculty/Staff Survey

Two Likert scale questions were used to assess the faculty/staff's use of the Blackboard LMS in their teaching before the pandemic and their projected use after the pandemic. The questions are shown below:

Thinking back to before the COVID-19 pandemic, to what extent did you use an LMS in your teaching? (Question 7, 273 Responses)

Thinking forward, to what extent do you think you will continue to use Blackboard or another LMS in your post-pandemic teaching approach? (Question 8, 271 Responses)

Figure 5 compares faculty/staff use of an LMS before the pandemic with their projected use after the pandemic, with over 50% of faculty/staff planning to use a LMS to a great or very great extent post-pandemic compared to only approximately 29% who used it in the same capacity pre-pandemic. During the pandemic almost all teaching was conducted online so a question about the time during the pandemic was not necessary. Also, note that question 7 has two more responses than question 8; however, compared to the total number of respondents in each question this is a very small number (<0.5%), therefore the effect of this discrepancy will be neglected, and the results of both questions will be directly compared. The pandemic has changed the education industry and it "has opened a door to new ways of teaching and learning" (Chandler, 2021). "Online will become a routine part of teaching" because "many teachers have mastered key technologies and the accompanying pedagogy" (ETF, 2020). The data in Figure 5 supports these statements and the potential reliance on online systems in the future shows the need for a comprehensive LMS that can help facilitate online learning in an intuitive fashion.

## Figure 5
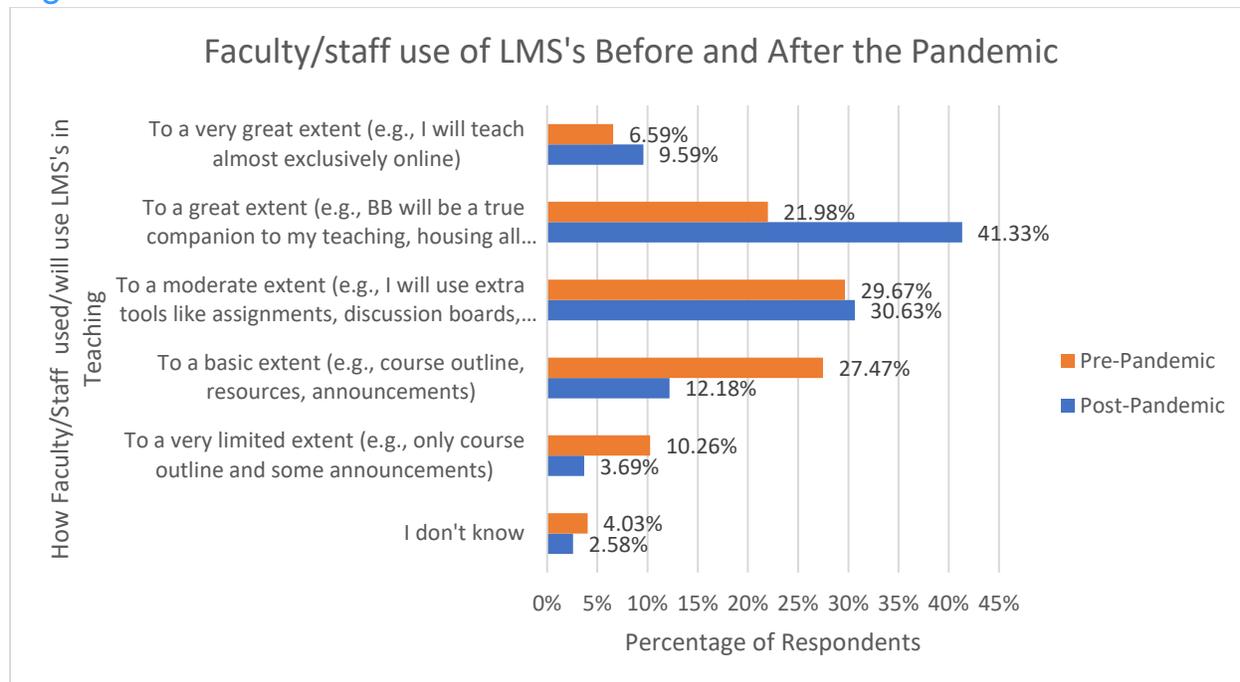
# Potential Future LMS's for the University of Windsor

## Blackboard

Blackboard Learn Original (not to be confused with Blackboard Learn Ultra) is the current system being used at the University of Windsor. Blackboard offers plenty of functionality from allowing instructors to create tests, teach a live session using the virtual classroom, use the adaptive release functionality to release an assignment at different times to different groups and much more. Despite having excellent functionality, it is not the most intuitive or easy to learn system (Gonzalez, 2022) which was a sentiment echoed by the internal faculty/staff and student surveys. Blackboard has created a lot of documentation and videos describing how to complete certain tasks, but some instructors still find the platform cumbersome to use. The University of Windsor has created its own documentation and wiki pages on Blackboard to support the University community; however, many instructors prefer to visit the BB Café (virtual drop-in help desk) for support. The instructors usually know that a certain functionality exists, but they have trouble finding that functionality within Blackboard. Navigating Blackboard can be challenging at times and its outdated UI adds to the problem. Blackboard is easier to learn for students because of the restricted functionality available for them. There are some specific issues that were brought up in the student survey that will be discussed in the survey section below.

### Blackboard in the LMS Survey

Since Blackboard is the current LMS at the University of Windsor, there were many questions in the LMS surveys that were specifically focused on Blackboard and how it compares with other LMS's. A summary of the analysis done for some of these questions will follow.

Which of the following LMSs have you used? (Question 14, 341 Responses)

Figure 6



Different LMS's that Survey Respondents Have Used (Faculty/Staff Survey, 341 Responses)
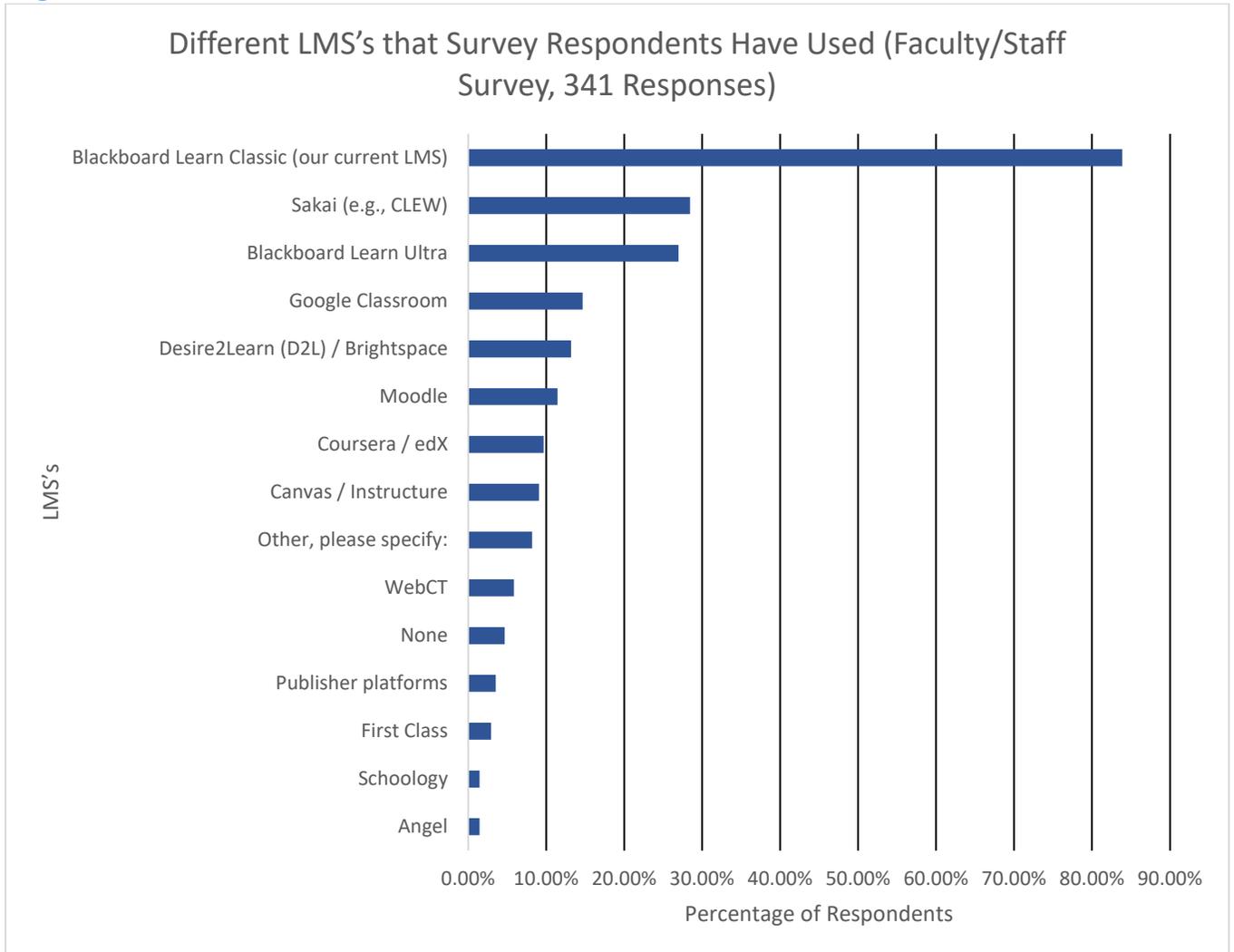
Figure 7 shows the different LMS's that faculty/staff have experience with. It is important to note no LMS other than Blackboard Learn Original (which is the current LMS at the University of Windsor and was referred to as Blackboard Learn Classic in the surveys) had a response rate higher than 30%. This is important to note because it shows that many faculty/staff members did not have much experience with other LMS's, and the experiences they share may be based solely on their use of Blackboard Original.

In your opinion, how does Blackboard compare to other LMSs you have used? (Question 15, 225 Responses)

Q15 Response Categorization Percentages (Faculty/Staff Survey, 225 Responses)
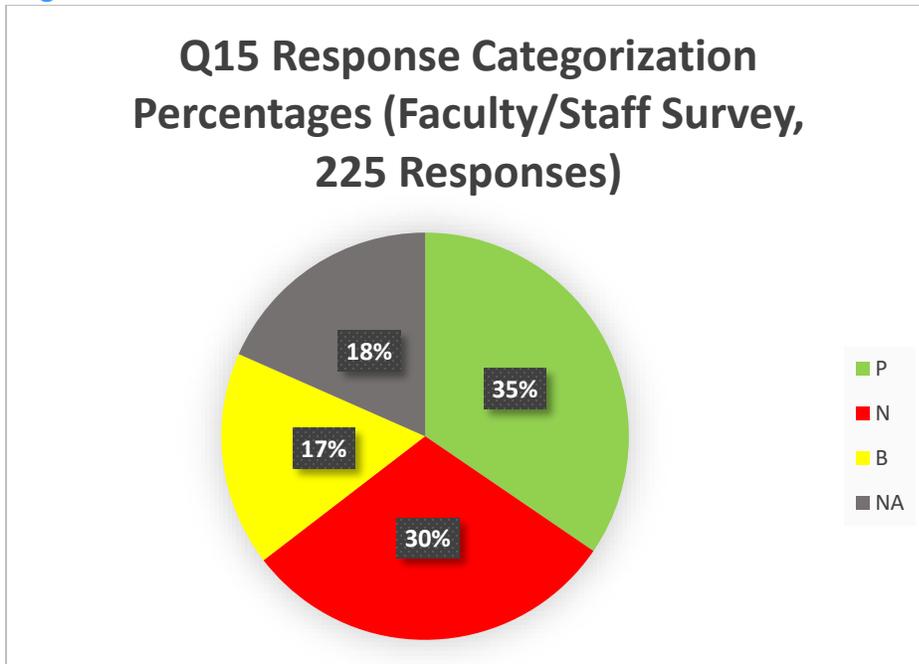
In this question, respondents were able to type their answers, so the responses were qualitatively analyzed and themed in categories. Each response was first categorized as positive towards Blackboard (P), negative towards Blackboard (N), both positive and negative (B) if the respondent mentioned something they liked and disliked about Blackboard and not applicable (NA) if the response did not answer the question or provide any insightful information. Please note, the question was asking respondents to compare Blackboard to other LMS's they have used, but since many may have only used Blackboard, they just provided their thoughts about Blackboard with no comparison to other LMS's. The responses that were identified as P, N or B were then further classified into different themes. A summary of some of the most recurring themes is provided below.

Figure 8
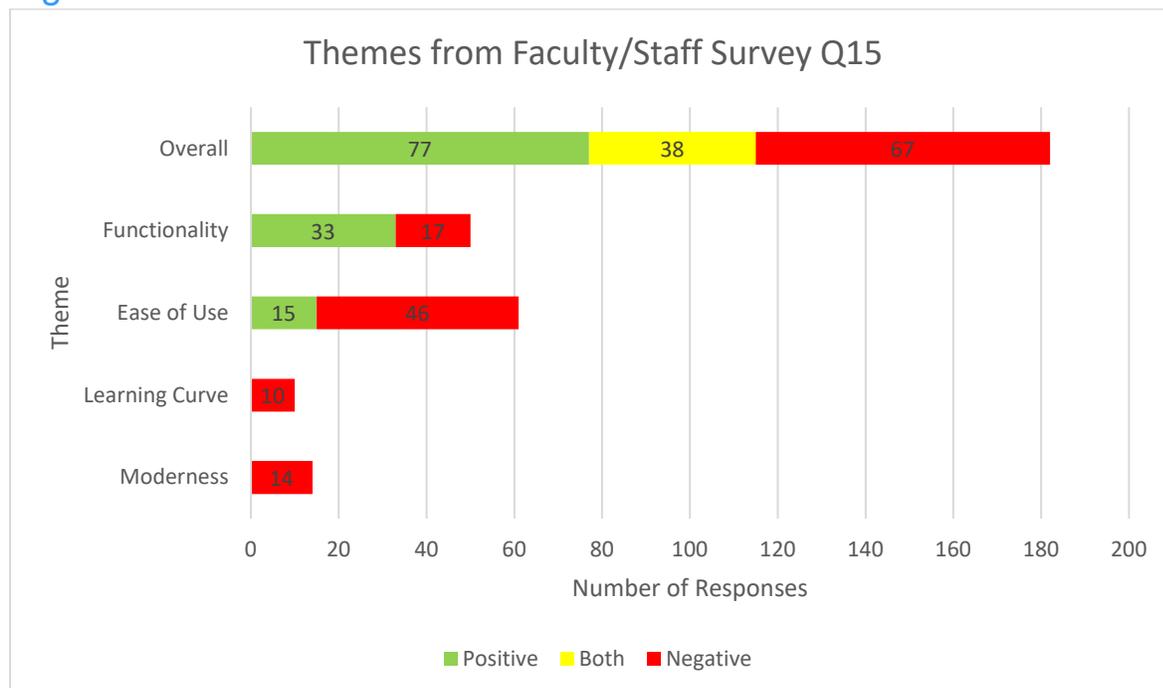


At the top of the figure, it shows the overall number of responses that were classified as positive, negative and both. Some of the most common themes identified are also shown below that. These themes were only classified as positive and negative. Functionality and ease of use were primary concerns for the respondents. The functionality of Blackboard was mostly praised by respondents with some saying that it has "sophisticated functionality", "provides necessary features" and "does 95% of what I need to do". This praise for Blackboard's functionality was not universal and there were some respondents that did not think it matched their standards. One user claimed that "Functionality is below average" while others targeted specific features such as the grade center and the virtual classroom. "Some features are overly complicated, such as the…Full Grade Center", "it has some weakness in assignments and the grading of them", "Terrible grading software to set up, totally non-intuitive", and "The worst is the grading/assessment platform; I use other platforms (e.g., OneNote), to collect student's work and provide timely feedback. The rubric system is cumbersome and requires a great deal of labour on the instructor to initiate" are some of the comments related to grading in Blackboard. As for the virtual classroom, it was criticized for being "cumbersome to use" and for leaving users wishing "to have more features in the virtual classroom". Many of the respondents that criticized the virtual classroom stated that they prefer Teams or Zoom for virtual meetings. In terms of ease of use, respondents felt the opposite way as they did for functionality. Blackboard was described as "not user friendly and cumbersome", "hard to navigate", "often complicated", "not intuitive" and "a bit clunky". The consensus was that there were too many clicks required to do a simple task and it was hard to find where certain features were located. There were some respondents that felt Blackboard was easy to use. Some of these respondents talked about the University's previous LMS (Sakai based LMS called CLEW) which may indicate that they have been using Blackboard for a long time hence they find it easy to use.

Blackboard's UI was also heavily scrutinized with many respondents describing it as "outdated" and not a single respondent argued the opposite.

## Blackboard Learn Ultra

Blackboard Ultra is designed to be cleaner, more modern, and easier to use than Blackboard Original. Each has features that the other does not have (niu, n.d.), so there are advantages and disadvantages for each. There are some notable differences between the two such as there being no survey tool in Ultra, some question types for tests are missing from Ultra and Ultra has discussion analytics whereas BB Original does not. A detailed comparison of the two is given in table 2.

## Table 2

*Feature comparison of Blackboard Learn Ultra and Blackboard Learn Original*

| Feature Name in Blackboard Learn Original | Feature Name in Blackboard Learn Ultra | In Original? | In Ultra? | Details |
|---|---|---|---|---|
| Date Management and Bulk Delete | Batch Edit | Yes | Yes (Limited) | Batch Edit is used to update common settings across content. Can update visibility, due dates and bulk delete pieces of course content at once. There are similar features in the Original Experience called the Date Management and Bulk Delete tools.<br><br>Feature Loss in Ultra → Only a single folder can be edited at a time, and you cannot bulk edit items within and across folders at the same time. |
| Calendar | Calendar | Yes | Yes (Enhanced) | Both have a calendar feature but in Ultra users can import their personal calendars into Blackboard. |
| Course Menu | - | Yes | No | There is no course menu in Ultra. All the content is listed on a single page and links to course tools are in the Details and Actions area or on the top right of the page. |
| Course Reports | Student Activity | Yes | Yes (Limited) | Both versions of Blackboard have course reports with some differences. The Student Activity report summarizes student activity on an Assignment or Test. It provides information about whether students have opened the assessment, how |

| | | | | long they had it open, and their grade. Also provides additional information such as the date opened and started and the time from start to finish.<br><br>Feature Loss in Ultra → there is no way to view how often students have accessed the content in the course. |
|---|---|---|---|---|
| Discussions | Discussions | Yes | Yes | There are some UI changes to discussions in Ultra to modernize them.<br><br>Feature Loss - Students cannot be prevented from editing or deleting their posts, but replies are not deleted when posts are deleted. Subscriptions are not available, but discussion posts are included in the Activity Stream and daily notifications. |
| Edit Mode | - | Yes | No | There is no edit mode toggle in Ultra because the instructor is always in edit mode unless they are in student preview mode. |
| Grade Center | Gradebook | Yes | Yes (Limited) | Many of the features from the Grade Center are in the Gradebook, but there are some key differences. The Gradebook is displayed as a list by default, but it can be changed to a grid view similar to the Grade Center. In Ultra, students cannot see grades by default, instead the instructor must make grades available when they are ready. Lastly, in Ultra a zero grade can automatically be assigned to students who did not submit assessments by the due date.<br><br>Feature Loss in Ultra →<br><br>- Overall Grade can only be calculated based on a weighted total.<br>- Columns cannot be sorted by clicking on the headers.<br>- The Needs Grading view is discontinued, but assessments that need to be graded can be found in the |

| | | | | Activity Stream or on the list view of the Gradebook. |
|---|---|---|---|---|
| Groups | Groups | Yes | Yes | Groups in Ultra work similarly to Groups in Original. |
| Rubrics | Rubrics | Yes | Yes (limited) | Rubrics are available in both Original and Ultra for all assessment types. Feature Loss in Ultra → Rubrics can only use percentage and percentage-range options. Point and point-range options are under development Rubrics can only have a maximum of 10 rows and 10 columns. |
| SafeAssign | SafeAssign | Yes | Yes (limited) | SafeAssign is available in both Original and Ultra for assignments, but in Ultra there is the extra capability to enable it for essay questions on tests. Feature Loss in Ultra → Direct submit does not exist. |
| Survey | - | Yes | No | Surveys are not currently available in Ultra, but Blackboard plans on developing them in the future. |

Note: Adapted from (Northern Illinois University, n.d.)

## Blackboard Summary

Blackboard Learn Original is currently being used at the University of Windsor and it offers a plethora of tools and features that faculty, staff and students enjoy using. There have been some complaints regarding the UI and ease of use, but the system has worked well enough to support teaching and learning at the University. Blackboard is shifting their focus to Blackboard Learn Ultra and this will most likely be the system that the University will use if Blackboard is chosen as the LMS vendor for the future.

# Brightspace

Brightspace is a cloud based LMS that can be directly purchased from D2L, the company based in Canada that makes the LMS. Brightspace has many features similar to Blackboard's features including a calendar system, discussion boards, integrated email system, virtual classroom, ePortfolio and many more. According to the survey sent from the University of Windsor to other institutions to gather feedback of different LMS's, a big weakness of Brightspace is the virtual classroom and an additional tool had to be implemented to hold online classes. Support for Brightspace is available in many forms such as through phone, a help desk, community support pages, documentation and videos.

## Brightspace Reviews

Note: The reviews were obtained from a website (Capterra, n.d.) which aggregates reviews from different websites. The reviews were filtered to show reviews left by individuals that were from institutions or "Companies" with greater than 10000 individuals to obtain results from an environment comparable to that at the University of Windsor. Also, there is no way to verify any of the credentials of the reviewers.

When the above filter is applied there are 9 reviews for Brightspace. The reviews for Brightspace were mostly positive, but some reviewers still had criticism for the software. One reviewer wrote that Brightspace is "clunky" and that "It can be difficult to locate resources within the software which can be very frustrating". Another reviewer mentioned "it is frustrating to use and has more case-by-case / glitching problems that other learning management softwares I have used" and they also echoed an issue which was brought up frequently by Blackboard users and this is that the LMS "provides multiple places to find the same things" and "There are multiple levels of redundancy that are not kept consistent throughout the interface, so it is often confusing to locate materials". Other criticisms of the software were that it is "pricey" and that "It can be difficult to operate on mobile devices". Despite some negative feedback, most of the reviews were positive and they mentioned specific features of Brightspace that they enjoyed. Some reviewers were more general, and they aligned with the sentiment that Brightspace "is really easy to use and very user-friendly".

## Brightspace in the LMS Surveys

Brightspace was compared with Blackboard on numerous occasions in the student LMS survey. Some students had a positive opinion of Blackboard but the vast majority of students that mentioned Brightspace thought it was a better system than Blackboard. Most of the statements made by students that thought Brightspace is superior to Blackboard can be summarized by this one statement: "Brightspace is smooth, attractive, and intuitive". The students that found Blackboard to be the superior LMS thought that it is "more user-friendly than Brightspace" and has "some features that D2L did not have". In the faculty/staff survey, Brightspace was almost unanimously accepted as a better platform than Blackboard. The respondents cited ease of navigation, ease of use and better functionality as the main reasons for their support of Brightspace. One specific feature from Brightspace that was mentioned was the intelligent agents which allow an instructor to send automated emails to students if a certain condition is/is not met. For example, a respondent in the survey said, "if a student were to miss a deadline" the instructor could "set up a triggered email to remind of the assignment". One respondent that was very familiar with both LMS's remarked "both LMS [*sic*] hampered by proprietary limitations. I think an open source LMS should be considered".

## Brightspace Summary

Brightspace is one of the best LMS's today and it can potentially serve as the future LMS for the University of Windsor. The system will have to be tested by members of the University before a decision can be made and factors such as cost will also play a part in determining if this LMS will be the right fit. Brightspace was compared to Blackboard throughout the LMS surveys and in many online reviews with most comparisons being favourable to Brightspace.

# Canvas

Canvas is a web based open source LMS that can be purchased directly from the company that makes the LMS, Instructure. Canvas has many features that only a few other LMS's offer or no other LMS's offer. These features are major selling points for Canvas. SpeedGrader is one of those features. It allows instructors to view submissions, add annotations and provide feedback all in one place (Instructure, n.d.). It is very similar to Blackboard Originals grading view, but there are some differences. According to the University of Saskatchewan when the SpeedGrader is compared to Blackboard's grading feature "the features & functionality overall is richer than what is available in Blackboard" (University of Saskatchewan, n.d.). Canvas also offers many integrations with other tools such as BigBlueButton, Microsoft Teams and many more. Canvas offers integrations through its application programming interface (API) and Learning Tools Interoperability (LTI) (Gonzalez, 2022). Canvas has many more built-in integrations compared to Blackboard (Gonzalez, 2022). Support for Canvas is available in many ways. Canvas offers support through email, phone, chat and tickets (Polakowski, 2020). There are also many support pages created by Instructure to support users and there are community support pages where users can help each other.

## Canvas Reviews

Note: The reviews were obtained from a website (Capterra, n.d.) which aggregates reviews from different websites. The reviews were filtered to show reviews left by individuals that were from institutions or "Companies" with greater than 10000 individuals to obtain results from an environment comparable to that at the University of Windsor. Also, there is no way to verify any of the credentials of the reviewers.

When the above filter is applied, there are 226 reviews for Canvas. The lowest reviews for Canvas were related to its UI. One reviewer commented "The way it is organized is very confusing and not intuitive whatsoever" and "it's never easy to find what you are looking for". Another user said "It is a mess! Too many things link from one thing to another without it making too much sense". Some reviewers who left positive reviews also complained about the software being difficult to navigate. Despite Instructure claiming to have a 99.9% uptime (Polakowski, 2020), there were several users that complained about the software crashing and being down sometimes. One reviewer wrote "The site frequently went down and would show an error page". Another person claimed that "Canvas can crash at times along with failure to update the new files". There were also some specific features of Canvas that were getting negative feedback from multiple reviewers. The messaging feature was mentioned a few times. One reviewer wrote "the messaging portion is frustrating and is difficult to get see who you are messaging" and another wrote that "Other than getting used to the message forum, the overall experience was not bad". There were also some complaints about the assignment, discussion, and notification tools as well as some reviewers stated that the app was not working well. However, most of the reviews for the LMS were positive with a lot of reviewers praising its functionality. Some users even commented that they did not have any negative experiences with Canvas. Blackboard was mentioned several times in the Canvas reviews. Almost all of the reviewers that mentioned Blackboard had a similar sentiment to these reviews: "Overall, Canvas is a big step-up from Blackboard and not only is convenient for

its users, but has a modern look to it." and "I used Canvas in grad school and thought it was terrific. Way better than Blackboard".

## Canvas in the LMS Surveys

Canvas was mentioned several times in the student LMS survey. One student that preferred Blackboard to Canvas mentioned that Blackboard has "many more features and has better accessibility" when compared to Canvas. Another student made a counter argument to the previous statement and mentioned that Blackboard "is not as accessible as the system used at my old university (Canvas)". A few other students mentioned that Canvas was "easier to navigate, both as a student and as a professor or GA", "Canvas was more put together and you could see everything in one place", "Canvas as a sleeker user interface for students" and "Canvas has better design". In the faculty/staff LMS survey Canvas was mentioned several times. Some respondents mentioned that they liked Blackboard better than Canvas. Some of them did not mention any specific reasons but others think that Blackboard "is simpler to use" and "more user friendly than Canvas". Another respondent felt the opposite way and described Blackboard as "not nearly so user-friendly as Canvas". Most of the other respondents that mentioned Canvas also shared a similar sentiment to this and mentioned that it was easier to use most functions in Canvas when compared to Blackboard as shown in this response: "Quizzes need to be far easier to set up. What takes me 20 minutes in Canvas takes an hour in BB, for exactly the same quiz". Some specific features of Canvas were given praise by respondents. The speed grader function was described as "incredibly efficient and well designed". The respondent claimed they could "get my grading down [*sic*] in a fourth of the time it takes me to do my grading on blackboard".

## Canvas Summary

Canvas is certainly one of the best LMS's on the market and it is a potential future LMS for the University of Windsor, but there are still some questions about the LMS that will have to be answered before a decision is made. Its functionality will have to be seen and tested and other factors such as cost will be factored in when a decision is made. Canvas is one of the closest LMS's in terms of functionality to Blackboard and according to online reviews and many of the participants who completed LMS surveys conducted at the University, it has a better UI and it is more user friendly than Blackboard. Ease of use was a recurring theme mentioned in the surveys, so this should be an important factor to consider.

# Moodle

Moodle is an open source LMS that allows for self hosting. Moodle has no licensing fees and no other service fees if the self hosting option is chosen but self hosting has its own costs. The cloud option for Moodle requires a third-party company affiliated with Moodle to host the LMS at a price based on the number of users and there may be a limit on the number of users you can have (Scavicchio, 2021) (Fenton, 2016). Since Moodle is open source, users report that it is easily customizable, and it has many plugins available for use. Moodle also has customizable themes that can change the appearance and functionality of the LMS (Fenton, 2016). Moodle relies heavily on plugins and themes as the basic Moodle LMS is lacking much of the functionality that other LMS's have. Users of Moodle have complained about the lack of functionality of Moodle without plugins (Capterra, n.d.). Moodle may or may not have all the functionality that the University of Windsor

requires. The only way to find out would be to test the system with the different plugins that would be needed. The plugins are also not guaranteed to work as advertised or work at all (MoodleDocs, n.d.) because they are usually created and maintained by other users of the platform. Support for Moodle is available in three different ways: Moodle documentation, Moodle community forums, and Moodle partners. Moodle documentation is very basic when compared to Blackboard documentation. Moodle documentation only covers the basic features that are available with the initial download of the LMS. Once a Moodle site is customized with plugins, this documentation may be obsolete because of how different a customized site can be from the original site. Currently, with Blackboard, much of the documentation for professors and students has been made by Blackboard and it is easily accessible on their website. The University has created some custom documentation and videos for some important/unique features, but a lot of support is available directly on Blackboard's website. For Moodle, most of the documentation/videos would have to be custom made at the University since the look and functionality of the LMS may be unique to the University. Documentation and support for plugins would have to be obtained from the creator of the plugin. Moodle community forums can also provide support on a wide array of topics. Certified third-party Moodle service providers are also available for a cost.

## Moodle Reviews

Note: The reviews were obtained from a website (Capterra, n.d.) which aggregates reviews from different websites. The reviews were filtered to show reviews left by individuals that were from institutions or "Companies" with greater than 10000 individuals to obtain results from an environment comparable to that at the University of Windsor. Also, there is no way to verify any of the credentials of the reviewers.

When the above filter is applied, there are 114 reviews for Moodle. Most of the negative reviews for Moodle generally disliked everything about Moodle. They criticized the customer service, functionality, and ease of use. One reviewer explained "The site is constantly crashing" and "I attend a large university that uses it and every single professor absolutely hates the site because of its difficulty to operate". Another reviewer claimed, "The platform is poorly and illogically organized" and "I was unable to upload a 40-page PDF to the platform, and when this platform is being used for graduate-level work, not being able to upload a mere 40 pages is unacceptable". Some reviewers also complained about the Moodle app and its lack of functionality. Despite some negative reviews, an overwhelming majority of reviews were positive for the platform and reviewers liked the functionality and experience of the LMS.

## Moodle in the LMS Surveys

In the student LMS survey, 2 students in mentioned that Moodle was easier to navigate because of its simplicity. In the faculty/staff LMS survey Moodle was mentioned several times. One respondent talked about how Moodle was user friendly making it intuitive to use and that it was able to do "anything Blackboard does". Another respondent mentioned that they preferred Moodle over Blackboard "even if the functionality is more restricted". A few other respondents mentioned that they liked the intuitive and customizable environment of Moodle. Nobody mentioned that they liked Blackboard over Moodle, but this may be because not many respondents have used Moodle. Also, since Moodle is customizable, some of the options mentioned may have been custom

features created by the respondent's previous institution and these features may not be available to all Moodle users. Lastly, it should be noted that each respondent uses an LMS in their own way. They may only use/know about certain features, so they may interpret that a certain LMS is better than another LMS based on their limited needs/knowledge.

## Moodle Summary

Moodle is a potential future LMS for the University of Windsor but its viability to serve all the needs of the faculty/staff/students is still unknown. Will Moodle be able to support over ten thousand users without any issues? Will Moodle be able to provide all the features needed by faculty and students? These are some of the questions that will have to be answered before a definite decision can be made on whether the University will consider a move to Moodle. After looking at online resources, online reviews, and data from the LMS Survey there are some key points that can be noted. Moodle at its core, without any external plugins, is a very basic LMS that can perform only the most basic functions such as uploading files and posting announcements. The interface is bland/outdated and there is very little customization options for professors (Capterra, n.d.). To match the functionality that Blackboard has, external plugins would have to be used or new custom plugins would have to be coded by a team at the University of Windsor. The experience in Moodle can depend a lot on administrators and instructors to complete its look and feel. A lot of professors do not have a lot of time and resources to dedicate to customizing an LMS, so this may lead to a bland experience for the students.

# Conclusion

To summarize, a LMS review is underway at the University of Windsor, and it contains information to consider when deciding the future LMS for the University. The purpose of the environmental scan was to help readers understand the LMS market using data from online resources and the LMS Surveys conducted at the University. Each major LMS that is a potential candidate was analyzed for its strengths and weaknesses and comparisons were made between the different LMS's. The largest section was for the incumbent LMS, Blackboard, and this was because of the vast amount of information that the University has about the LMS. A lot of the questions in the LMS surveys were about Blackboard and its functionality and this information was used to present its strengths and weaknesses. Data for Blackboard Learn Ultra was also collected because it is a potential LMS that has significant differences from Blackboard Learn Original. Brightspace, Canvas and Moodle hold a large share of the LMS market, and they were mentioned frequently in the LMS surveys and in online reviews, so their advantages and drawbacks were also considered. Industry movements and online reviews favor Canvas, but as with any other LMS, it will have to be tested and therefore, at this point a conclusion cannot be made. Each of the four potential LMS's considered in the environmental scan has something to offer for the University of Windsor and any one of them would be able to serve as the University's future LMS.

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