



Elon University

WEBSITE APPLICATION

FINAL REPORT

Interface Testing & Analysis

IME 6670: Application Development

Dr. Chen

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Introduction

For this application redesign project, we chose Moodle for our interface. As students, we constantly interact with Moodle and see shortcomings in terms of user experience and interface designs. Colleges in the US use different grade platforms and we knew of the ways those interfaces simplified certain processes that Moodle lacked. We felt like we could improve upon the solid foundation Moodle gave us to produce something impactful.

The members of Team ASL were Ashley Soderberg, Shaina Catchings, and Liv Archer. Although all team members offered their help throughout the entire process, we had certain expertise. Shaina's expertise was in data collection and analysis and coding. Ashley was the design expert who felt comfortable handling the aesthetics of our new and improved Moodle brand. Liv was the communications expert, handling the jargon and textual elements of the Moodle changes.

Table of Contents

Introduction	2
Empathize & Identify Pain Points	4
Defining the Problem	5
Ideating – Design Ideas, Theories & Frameworks	7
Prototyping & Expert Evaluation	11
User Testing – Methods & Research	21
Conclusion	27
Appendices	28

Empathize & Identify Pain Points

We completed user research to hear from real users of Moodle to better understand their outlook on Moodle. When going into the interview, we wanted to focus on asking good questions that revealed the pain points to discover the user's needs and gratifications. To do this, we decided to interview three participants in lieu of a focus group. By doing interviews, we gathered qualitative data through quotes.

We asked the interviewees 10 different questions (see Appendix A). We asked a range of different questions including a few demographic questions. Our goal was to ask open-ended questions that avoided bias and focused on features, frustrations, design flaws, and possibilities.

We interviewed three different participants. All participants were women and students at Elon. One participant used Moodle for only one year while the others both used it for 3+. There was no compensation for the interview but each participant participated voluntarily. Each interview was conducted separately in a one-on-one session. The participants were asked to provide verbal consent for audio recording the interviews so we could review the interview later and transcribe it (see Appendix B). Each interview took between 15 to 20 minutes. After all of the questions were asked, participants were allowed to offer any closing thoughts. Interviewers allowed the participants to heavily guide the discussion to hear their thoughts on the Moodle interface.

Defining the Problem

The data was transcribed using Otter. Ai (see Appendix C). After we received the Otter transcript, we checked our individual interview to make revisions and fix typos. Once the transcription was complete, we coded the data. When coding the data, we pulled out important information and grabbed quotes to support the information. We wanted to look for recurring areas of dissatisfaction or possibilities so we could understand what our users wanted when improving our interface.

After we received the Otter transcript, we checked our individual interview to make revisions and fix typos. Once the transcription was complete, we coded the data. When coding the data, we pulled out important information and grabbed quotes to support the information. We wanted to look for recurring areas of dissatisfaction or possibilities so we could understand what our users wanted when improving our interface.

When reviewing the interviews, we found recurring themes and pain points. Firstly, users shared how they were frustrated by the sidebar of the classes since it did not accurately reflect the classes they were currently enrolled in. One user said, “I wish Moodle would delete your old classes.” To combat this, we crafted the design question: ***What adjustments can we make to Moodle’s course sidebar to provide a more customizable user experience?*** This question needed to be addressed given the evidence from the interview reflecting how the sidebar was an issue. Some examples of quotes include “I just like my classes to be in my class

dashboard. That's my opinion.” and “I do think that the design could be improved to be a little bit more customizable to the course.”

Another heavily shared frustration was shared confusion since there is a lack of a central place where Moodle shows the assignments. Interviewees wished the calendar had all assignments and deadlines. Some quotes that were pulled from the transcription include, “I think that Moodle could do a better job of having a place where all of your deadlines coming up are” and “A Calendar tab that would improve efficiency if you're trying to see all of your due dates in one place.” In order to deal with the lack of universality for assignments, we crafted the question: ***How can we incorporate a weekly agenda function where students can view upcoming assignments?***

The final part of recurring complaints comes from the grades part of Moodle. Users disliked how they have to click on each class and then click on the grades section because it lacked efficiency. For example, the transcription includes the following quotes, “It would be cool if you could see like all of your grades under one page” and “The grades are definitely organized strangely, and I wish I didn’t have to click on a different tab to see them for each class.” In order to find a better solution to the display of the grades we decided to ask the question: ***What adjustments could be made to the way that grades are displayed and organized on Moodle?***

Ideating – Design Ideas, Theories & Frameworks

In determining our emerging design ideas, we first created three design questions that broke down our pain points and allowed us to identify and brainstorm specific areas of improvement on the current Moodle interface. Those questions were *“What adjustments could be made to the way that grades are displayed and organized on Moodle?”*, *“How can we incorporate a weekly agenda function where students can view upcoming assignments?”*, and *“What adjustments can we make to Moodle’s course sidebar to provide a more customizable user experience?”*. Through asking ourselves these questions, we brainstormed a variety of solutions that would aid in improving the Moodle interface.

The first question, ***What adjustments could be made to the way that grades are displayed and organized on Moodle?***, stemmed from pain points that we identified during our interviews surrounding the grading tab. We came up with numerous solutions, including: to create a page that is designated to grades in all classes; to include a widget at the top that says: *XX% / Grades on each class page so that you can easily access your grade in the class and know your overall class grade without having to click the grades tab; add a notification icon that your grade has been uploaded/changed in order to highlight assignment grades that haven’t been viewed yet; and on the Class Grade Page provide a ‘sort by’ option to view assignments in chronological order and simplify each tab to assignment name and grade, then click on the name to see how it’s weighted and see notes from teacher.*

The second question, ***How can we incorporate a weekly agenda function where students can view upcoming assignments?***, also stemmed from pain points we identified during interviews surrounding the current inefficiencies of the feature on Moodle. Interviewees said that the feature felt unused and inefficient. With this in mind, we wanted to significantly improve the uses of Moodle calendar and came up with numerous solutions including: adding a calendar to landing page and allowing a home screen to have a calendar view setting or a list setting; offering a interactive checklist feature for assignments; filtering out classes so you pay attention on specific upcoming assignments; and then users can look at individual classes and see what's due this week.

Our third design question was: ***What adjustments can we make to Moodle's course sidebar to provide a more customizable user experience?*** We came up with this design question through using input from our interviewees on the pain points surrounding the Moodle sidebar. Primarily, the pain points included the sidebar being over crowded or featuring classes that were no longer relevant to current course load. With this in consideration we saw that the Moodle sidebar needed to be more customizable to the user, and therefore brainstormed several solutions including: ability for the user to change the course names; a settings options to add, delete specific; the ability to pin specific classes at the top of sidebar; the ability to rearrange the sidebar; the ability to move sub-tabs (grades, participants) to under the main tab; and lastly the option to archive old classes.

In the end, we determined the best design idea by considering the different UX theories and frameworks that each potential solution upheld, and chose to focus on the option with the strongest supporting theories. Additionally, we took into consideration the quotes and feedback that we got from our interviewees and used their ideas to guide us to our solutions.

For the first question, we determined that our solution would be to create a general grades tab instead of listing grades under each course. We came to this conclusion because it solved the pain points suggested in the interviews, and also encompasses the solutions that we came up with. This was determined by using the Consistency and Standards theory because we plan to keep the Grades tab on the sidebar on both the homepage view, as well as the existing class page view. This is important because then users will not feel confused or uprooted by the addition of the grades tab to the homepage, but will instead have a smooth transition. Additionally, we chose this solution because there is more User Control because users are now able to access their grades from the home page, or from the class page. Finally, we also used the Aesthetic Usability Effect to determine this redesign because throughout the interviews users did the current Moodle designs to be aesthetic, and therefore we wanted to maintain consistent aesthetics throughout our redesign, and the solution upholds the current aesthetics of the interface.

For the second question, in the end we determined that the best solution to issues surrounding the Moodle calendar would be to filter out classes so you pay attention to specific upcoming assignments by class and due date. This change is important and would be supported

by the primary gratification for feature use because it offers user control by allowing the user to look at individual classes and have control over what is shown vs hidden. User control offers a sense of autonomy when interacting with an interface. The filter option makes students feel less overwhelmed when they look at a more challenging week of work. Miller's law indicates a person keeps 7 ± 2 pieces of information in their short term memory. Sometimes, there will be more than 7 ± 2 assignments displayed for a particular week, so filtering classes allows users to focus on a more reasonable chunk of information.

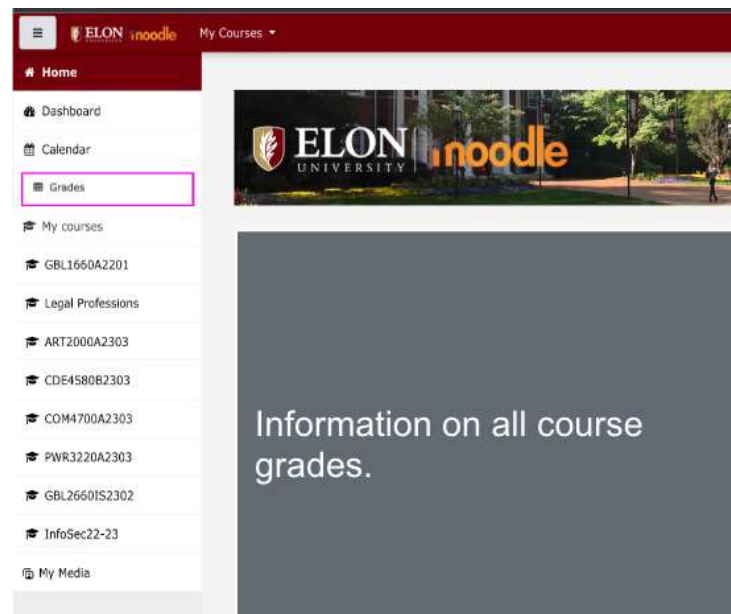
For the third question, we determined that adding a "Settings" option for customization would be most beneficial to solving this issue. Through adding the "Settings" option, users would be able to add, delete, archive, pin and change the name of course name, etc. This decision is upheld by the Aesthetic-Usability Effect states that users often perceive aesthetically pleasing designs more usable. The "Settings" option will allow users to be about to create an aesthetically pleasing design that will in turn create a positive response in their brains and lead them to believe the design works better.

Prototyping & Expert Evaluation

In order to create our prototypes, we used Figma as a tool to share our prototypes, create visuals and add functions to our designs. We created iterations of our design in Figma from low-fidelity to high-fidelity. In the beginning, we worked with wireframes in order to get a feel for our redesign and better understand the layout before diving into the visual aesthetics and functionality.

Grades Prototype – Low Fidelity

This screenshot (to the right) shows the low-fidelity version of our grades prototype, where the grades tab would be added onto the sidebar and that it would lead you to a page that has information about all course grades.



Grades Prototype - [High Fidelity](#)

These screenshots (shown below) show the high-fidelity version of the grades prototype. This prototype displays the redesign of the Moodle grades tab. It begins on the homepage, where we added a link to the grades tab in proximity to where the grades tab would be if you were seeking it on a class page. After clicking on the grades tab, you arrive at the

general grades tab where you can view a preview of your grade for each class, as well as hover your mouse over the 'Sort By:' option. Additionally, you can click on the icon next to the first class to see more information about the course.

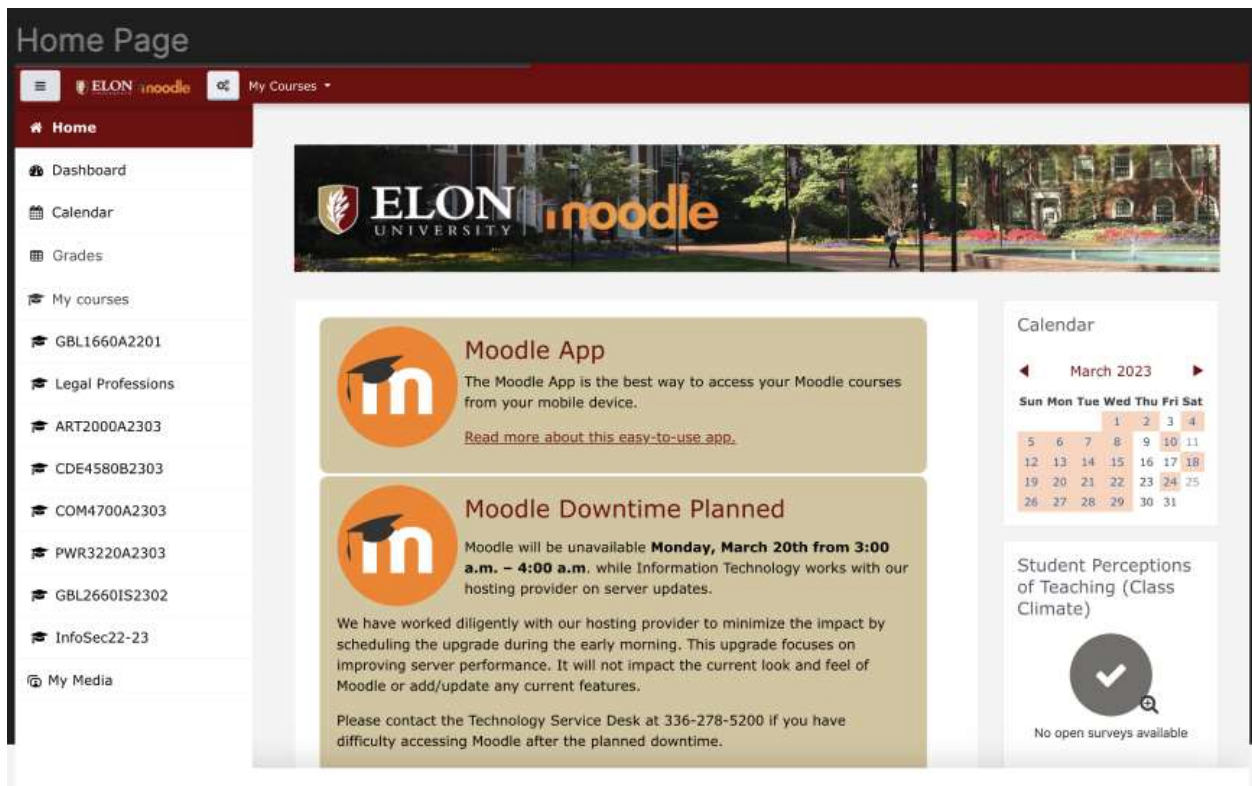


Image of the Grades Tab added to the Moodle homepage.

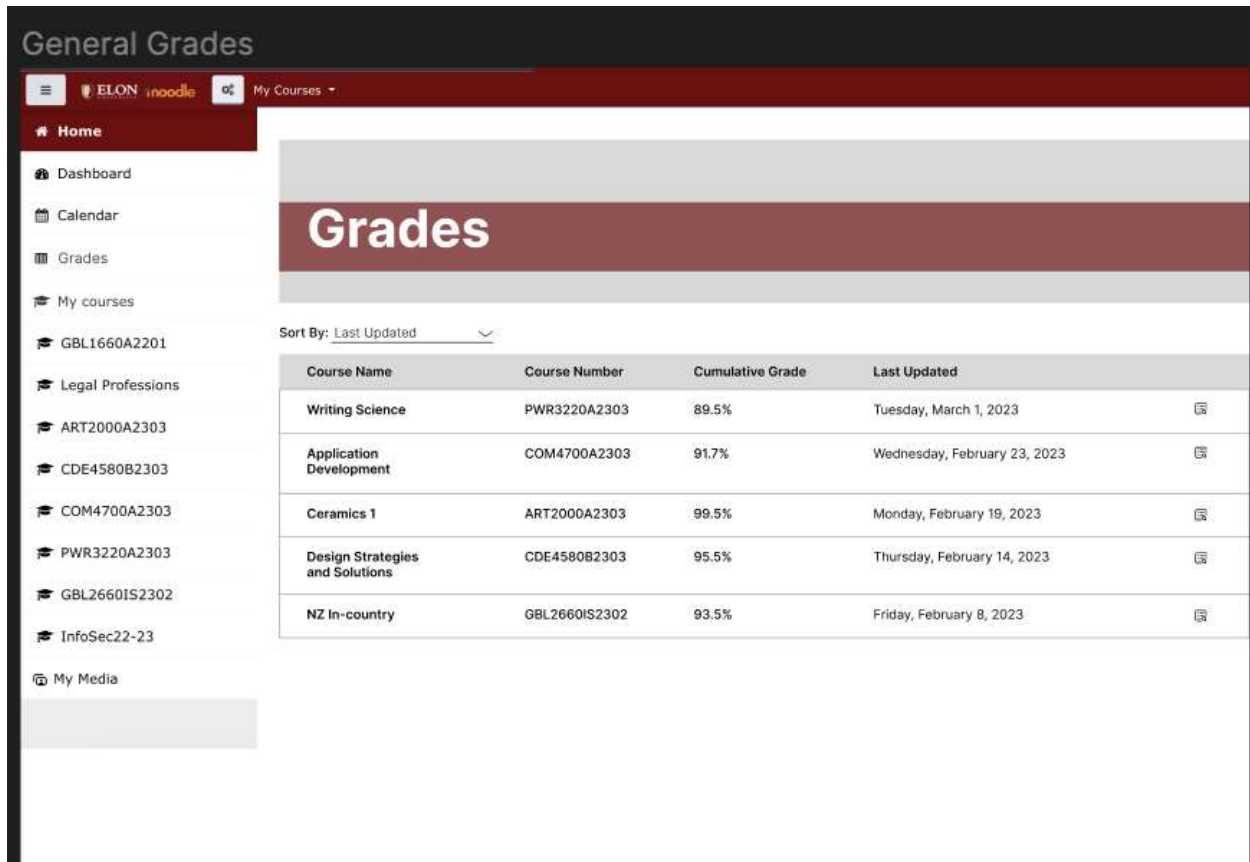


Image of the General Grades Page.

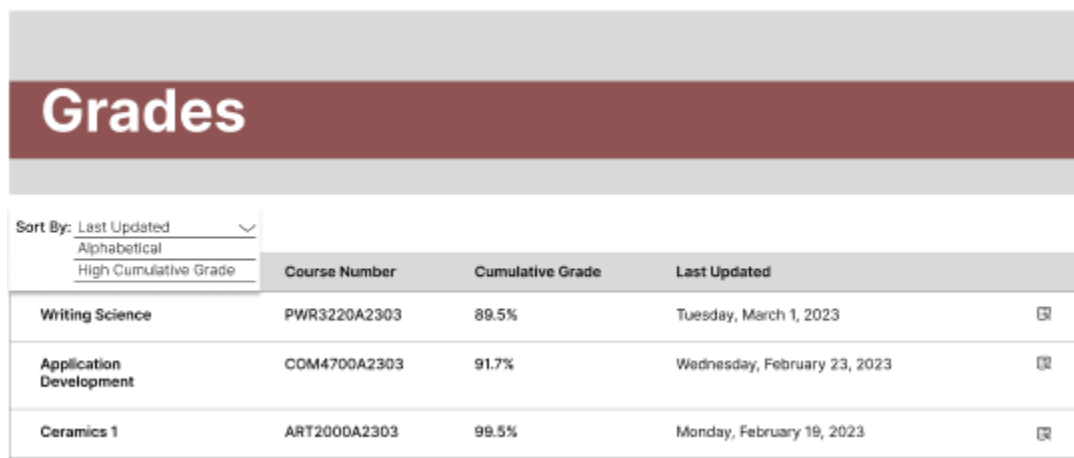


Image of a Closer look at the 'Sort By' option.

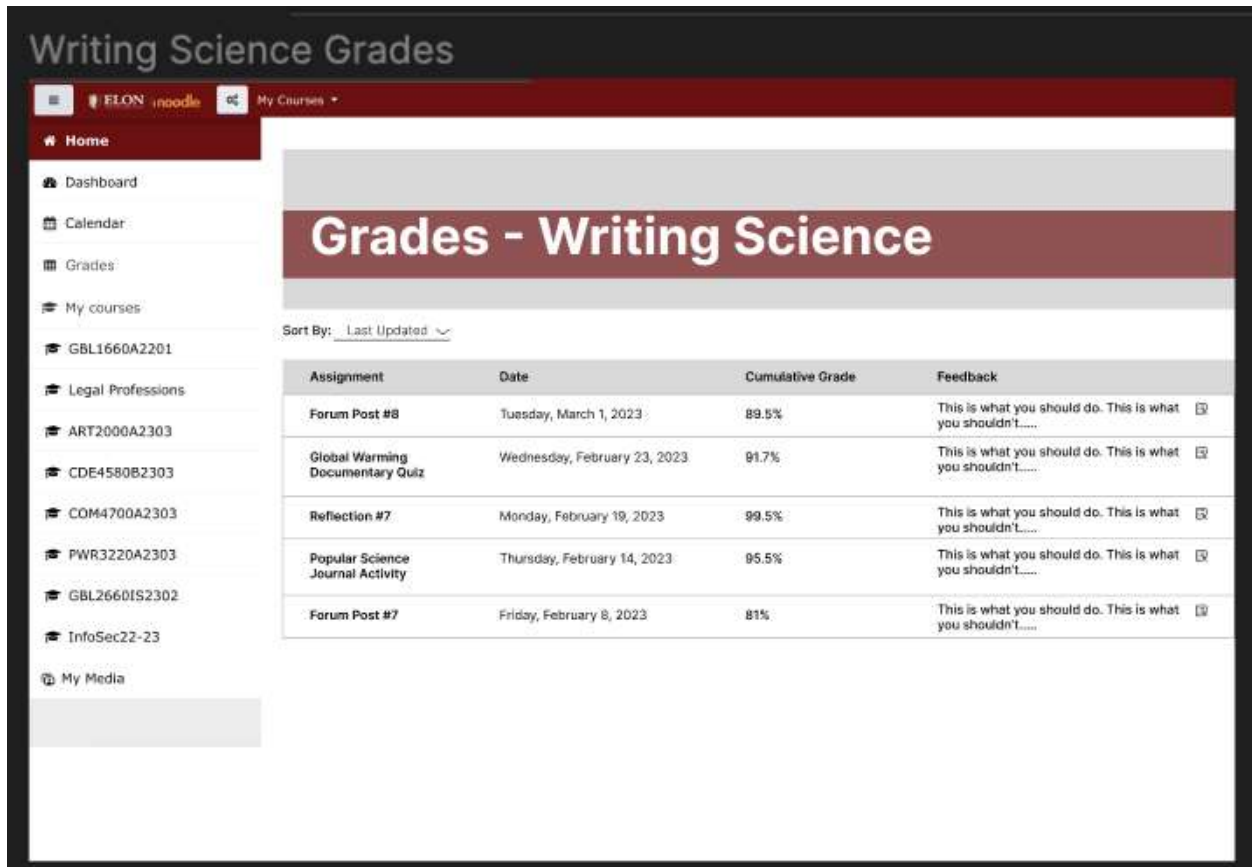
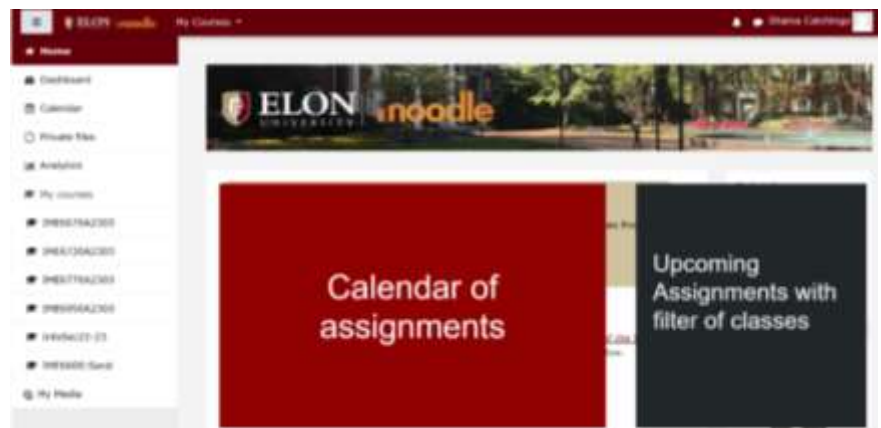


Image of an example of a Specific Course Grades Tab.

Calendar Prototype – Low Fidelity

This screenshot (to the right) shows the low-fidelity version of our calendar prototype, where the calendar of assignments would be enlarged with upcoming



assignments and the ability to filter by classes to the right of the calendar.

Calendar Prototype – [High Fidelity](#)

These screenshots (shown below) show the high-fidelity version of the Calendar prototype, which displays the redesign of the Moodle calendar. This new feature revamps the way to keep track of assignments and makes a centralized place for users to locate past and upcoming assignments, as well as adding their own.

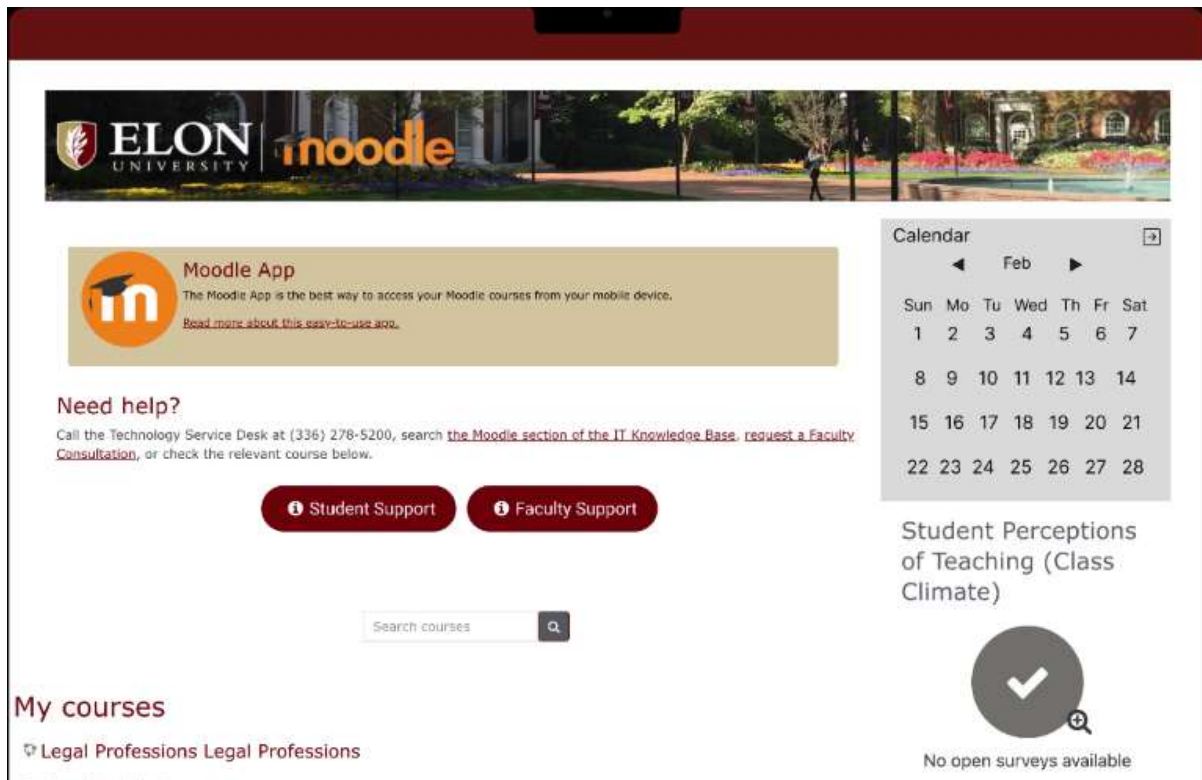


Image of the Calendar with added icon in top-right corner.

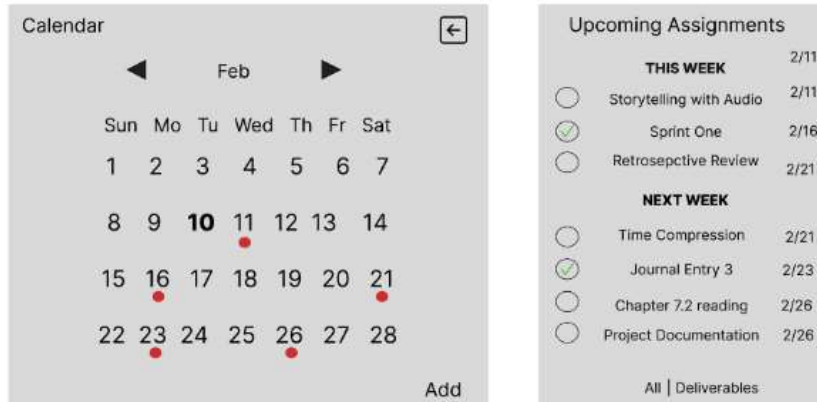
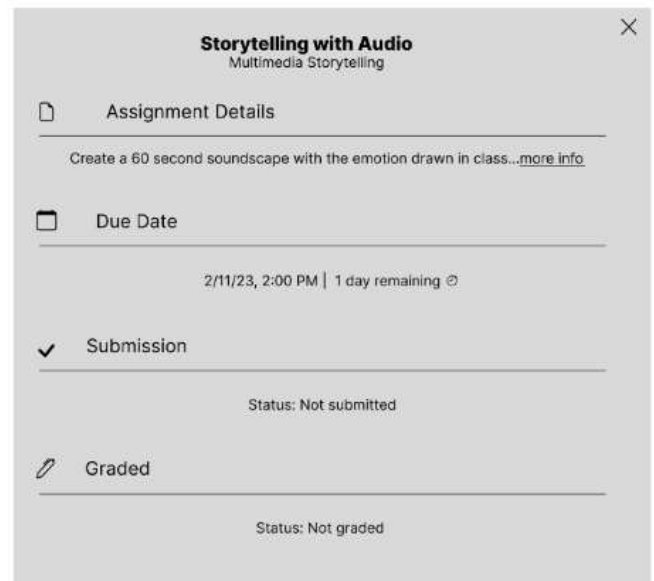
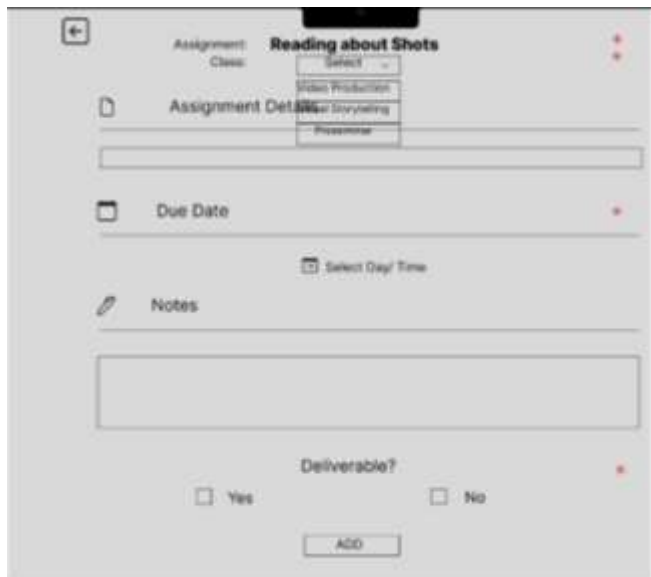


Image of the Calendar main page.



Images of adding an assignment to the Moodle calendar (left) and a specific assignment's details (right).

Sidebar Prototype – Low Fidelity

This screenshot (to the right) shows the low-fidelity version of our customizable sidebar prototype, where the settings tab would be added onto the sidebar and users would be able to archive, add, delete or rename classes.

Sidebar Prototype – [High Fidelity](#)

The screenshots (shown below) show the high-fidelity version of the sidebar prototype. This prototype displays the redesign of the Moodle sidebar, which allows users to customize their courses with renaming, archiving, pinning, and deleting capabilities. When archiving, users will be able to access those courses and unarchive them. When deleting, users will receive a confirmation message before completing the task.



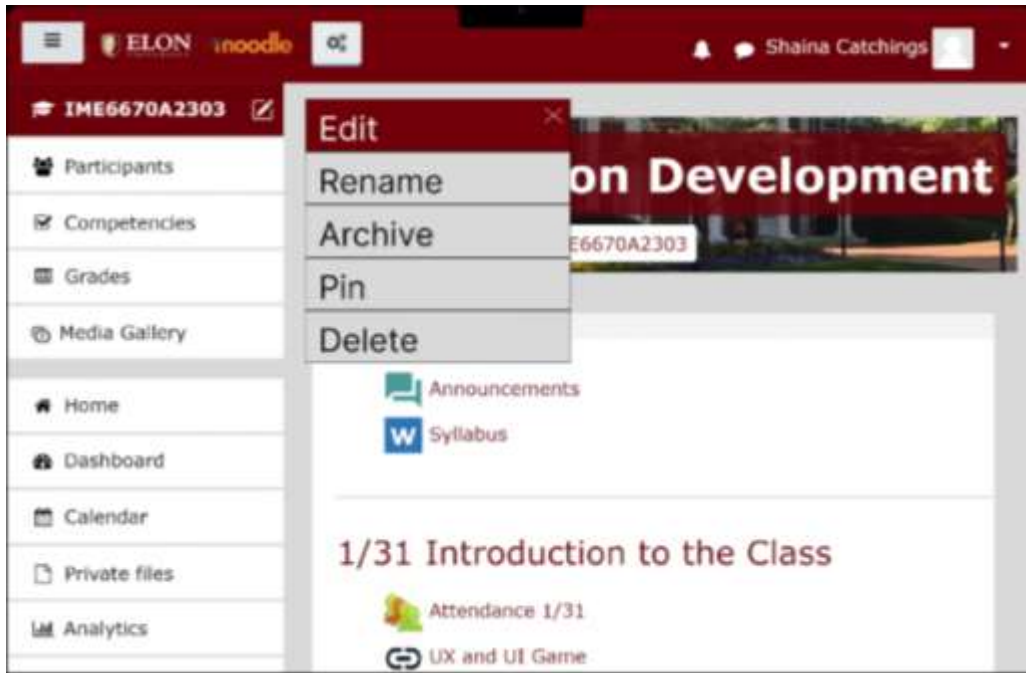


Image of edit icon customizable capabilities.

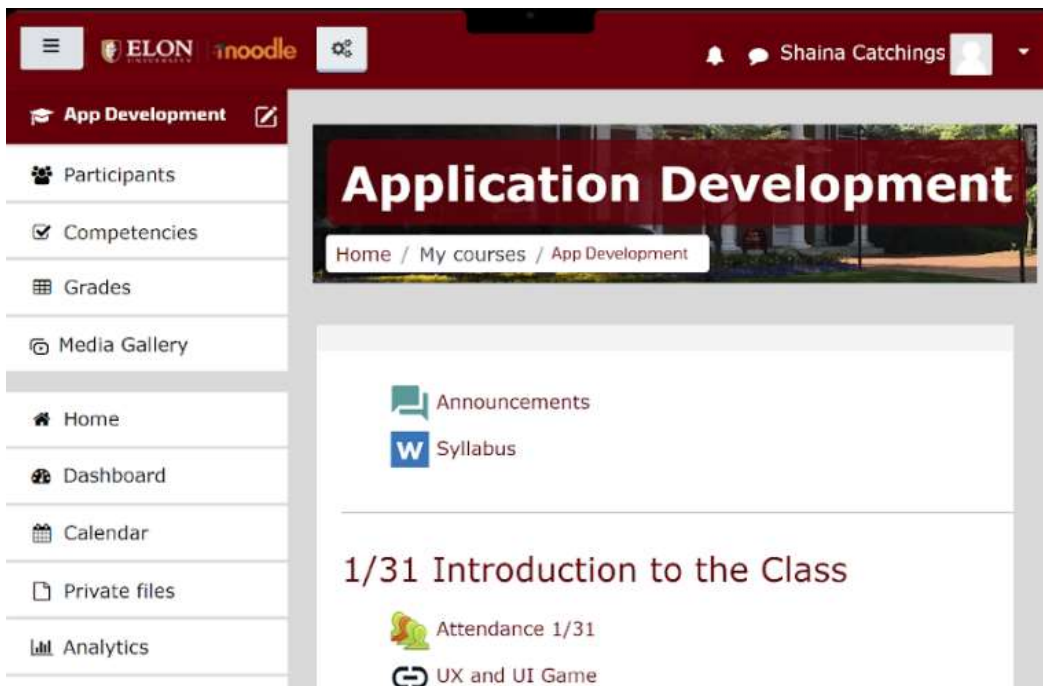


Image of a renamed course title.

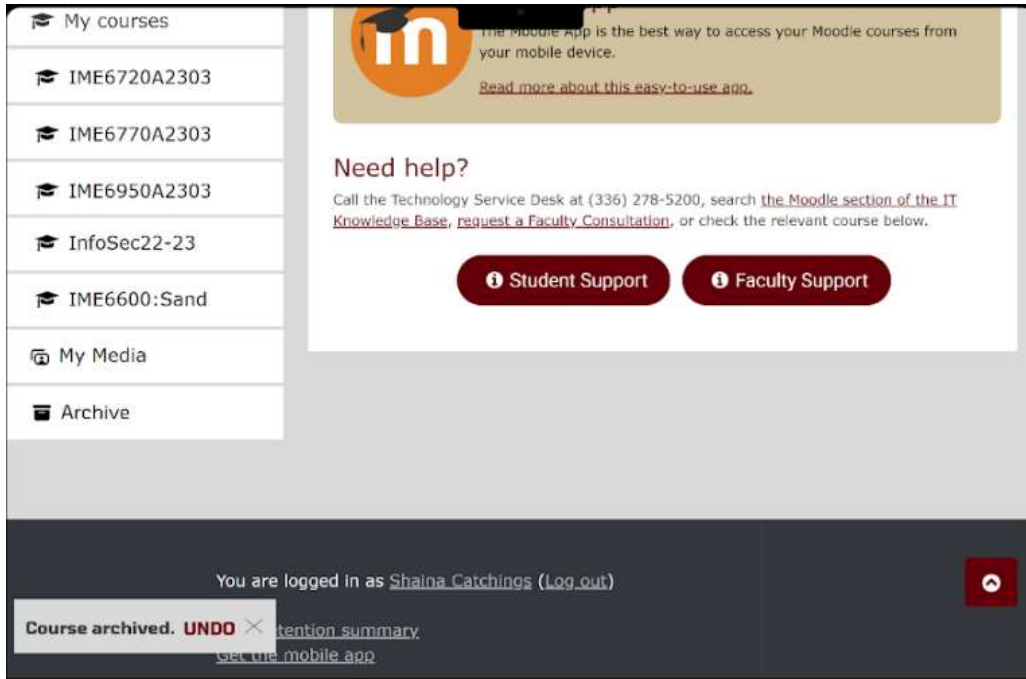


Image of a course being archived and the location of archived courses.

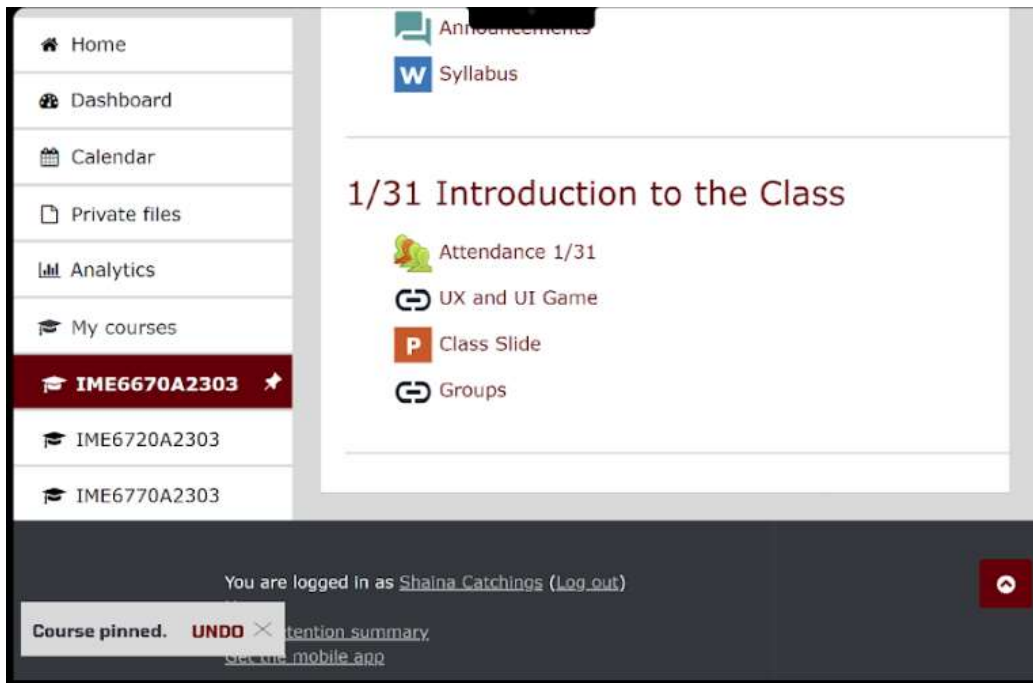


Image of a course being pinned to the top of "My Course".

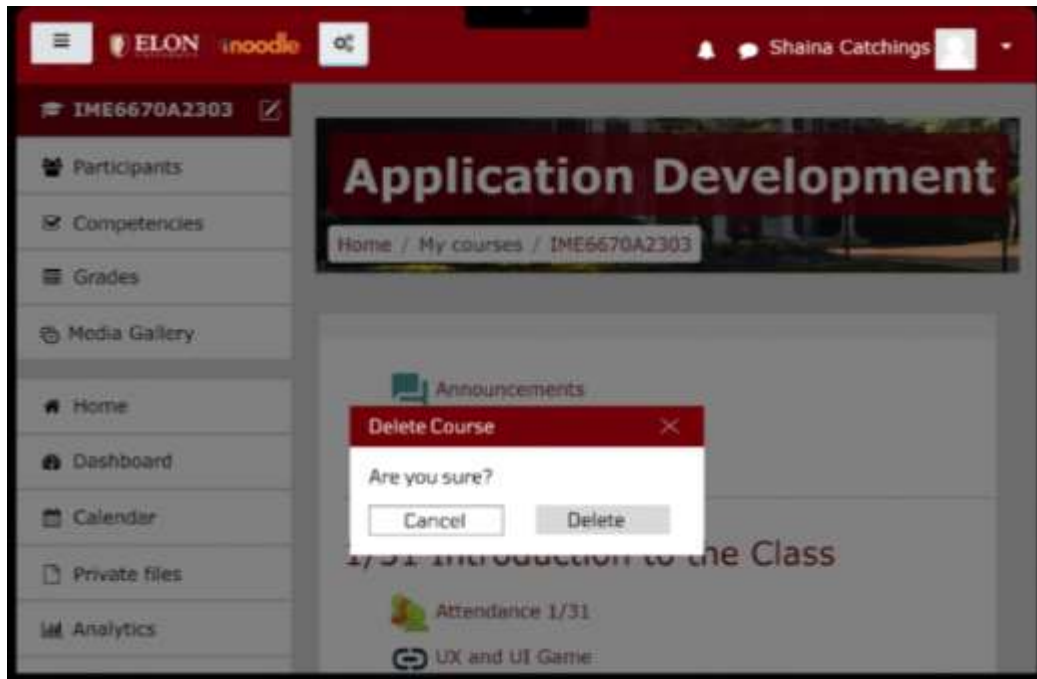


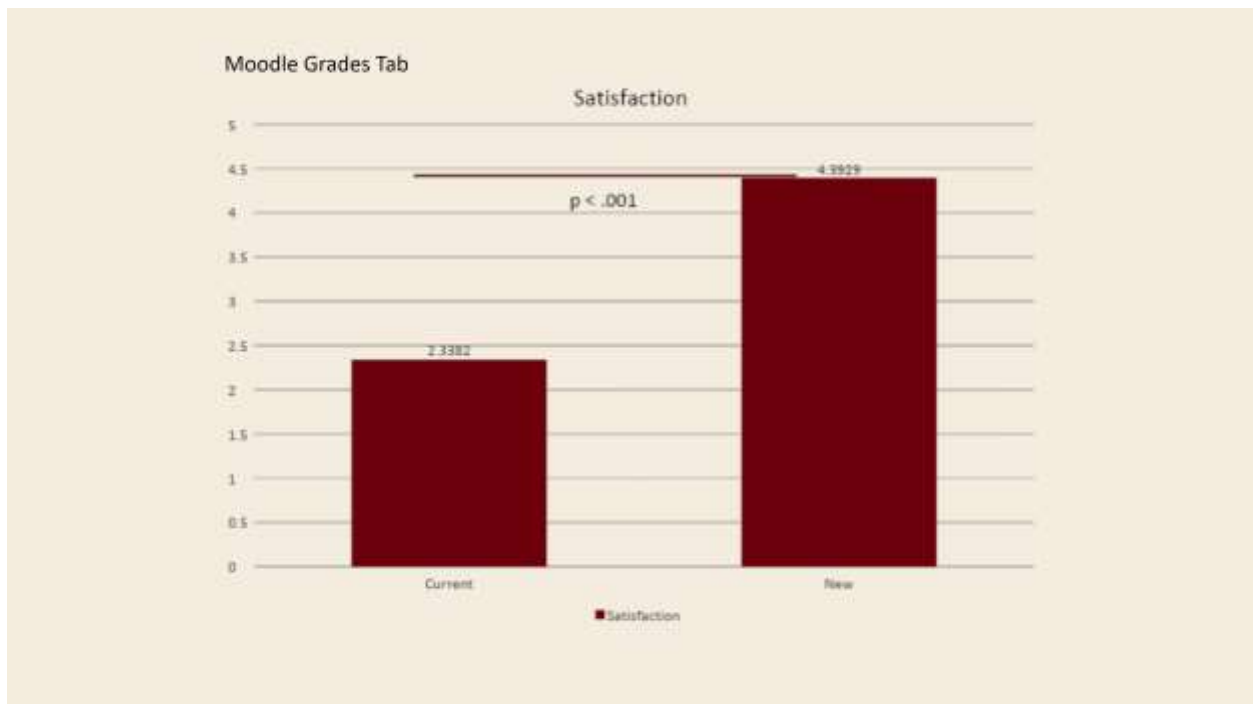
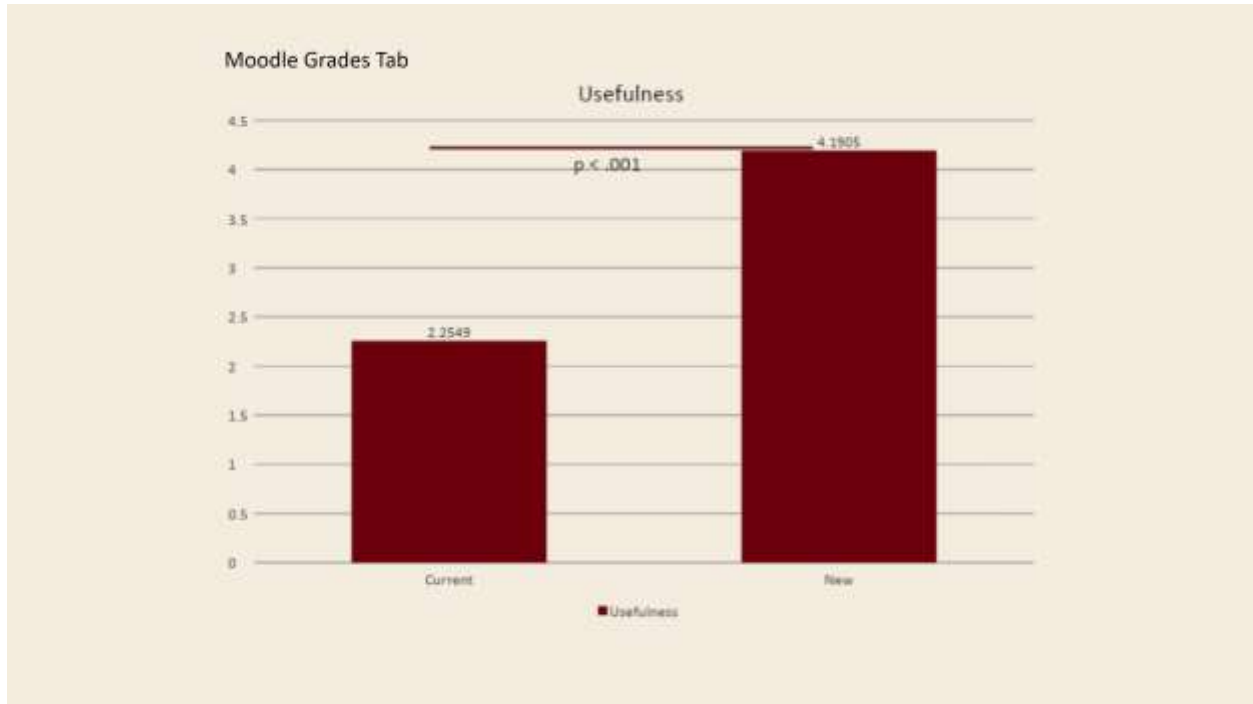
Image of a confirmation message.

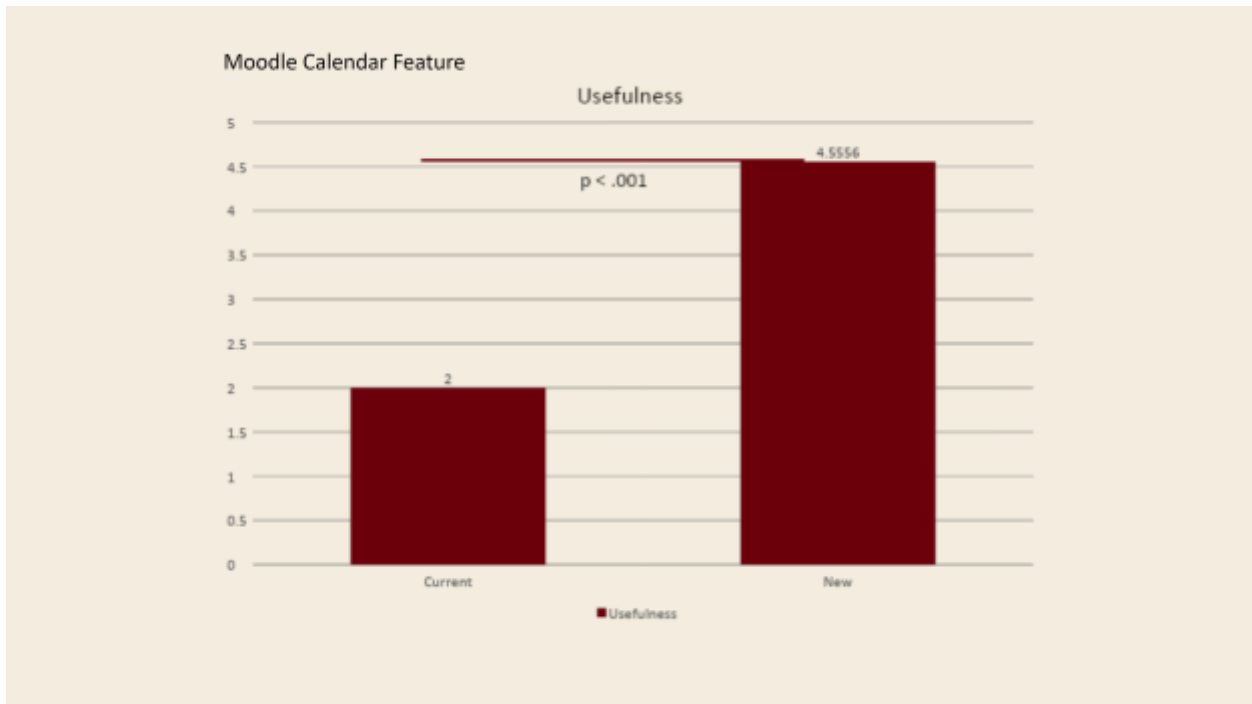
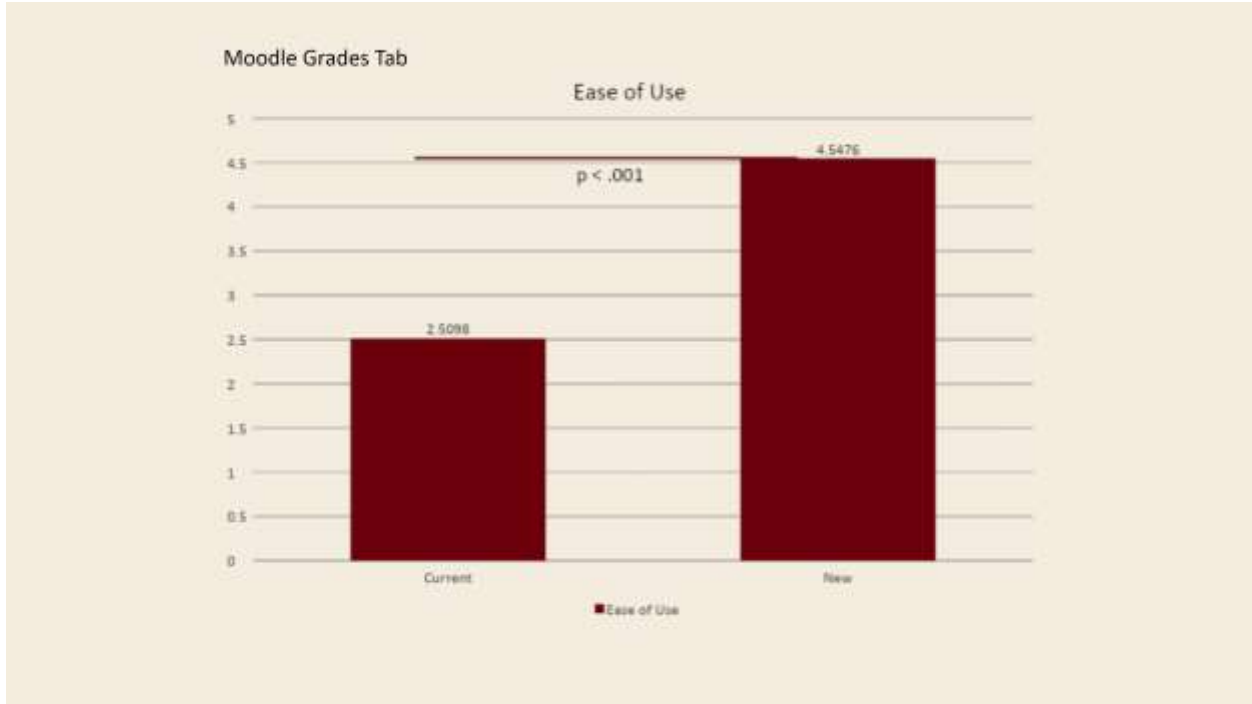
User Testing – Methods & Research

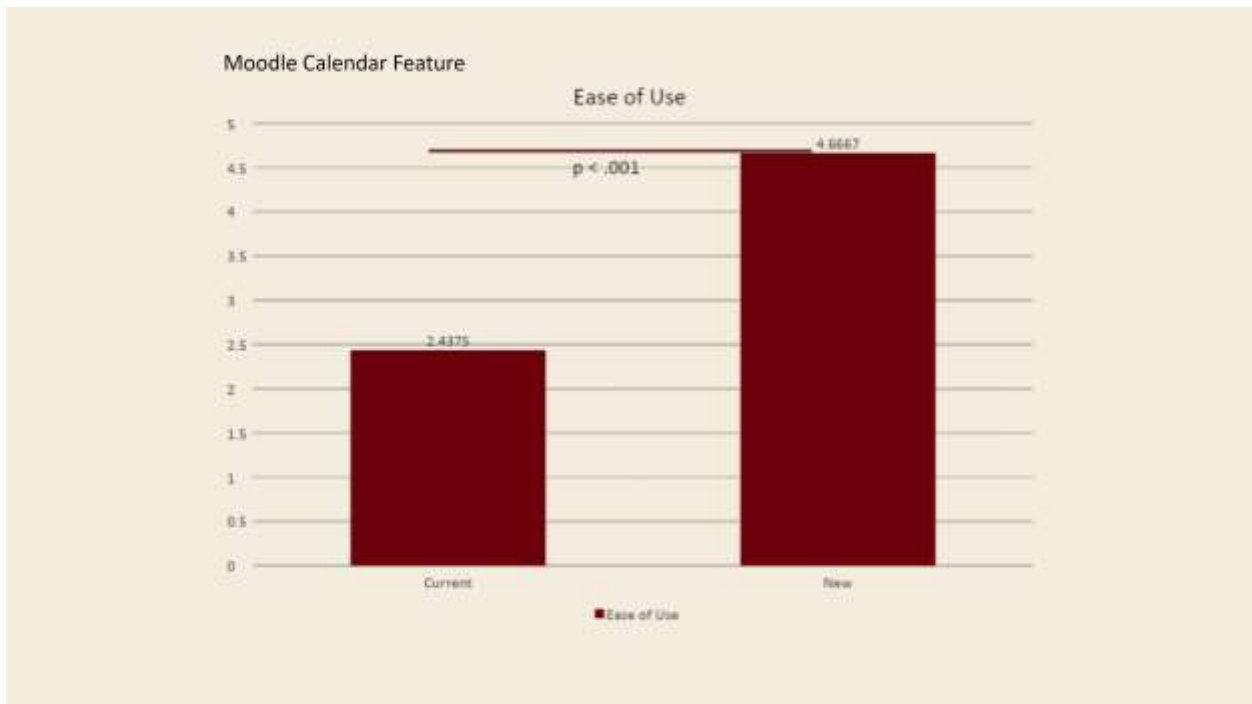
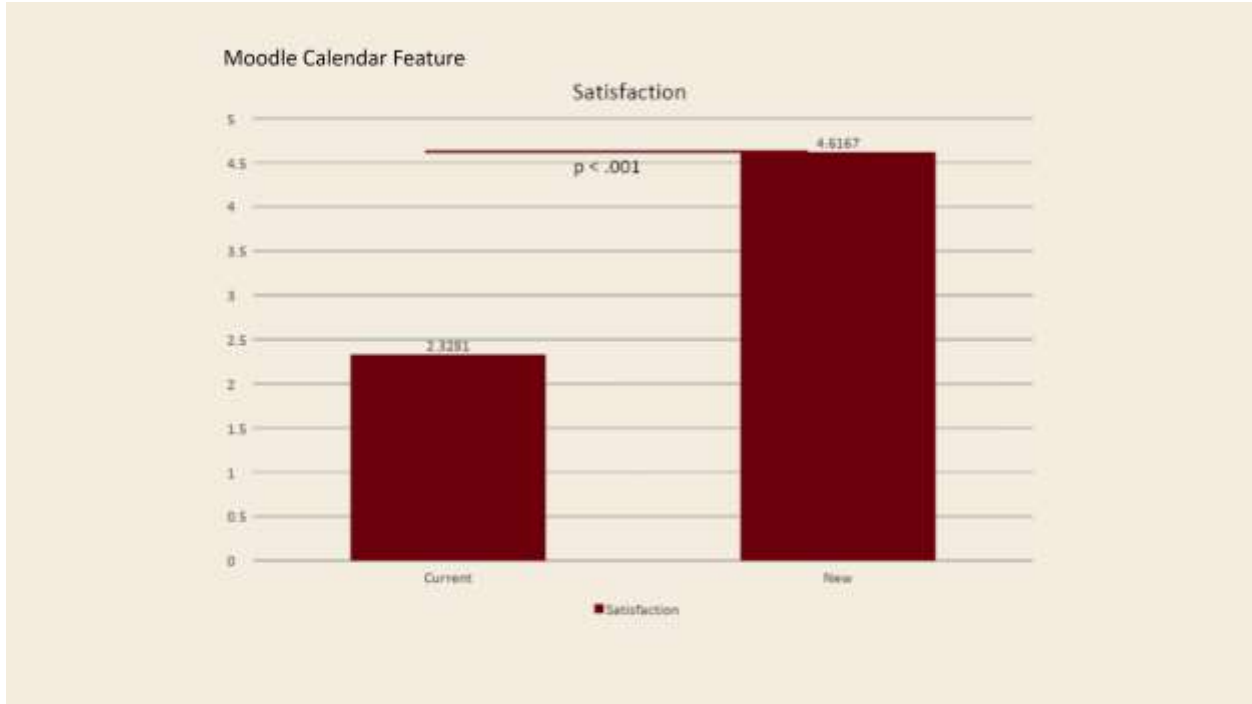
For our user testing, we conducted a survey study through Qualtrics and sent it to friends, family, and colleagues. Our goal was to test if the changes we made to the Moodle interface improved the user experience compared to the current interface. Using the randomization feature, participants were prompted to interact with either the current Moodle interface or the new Moodle prototype and asked to answer following statements based on their experience testing usefulness, satisfaction, and ease of use (see Appendices D - F).

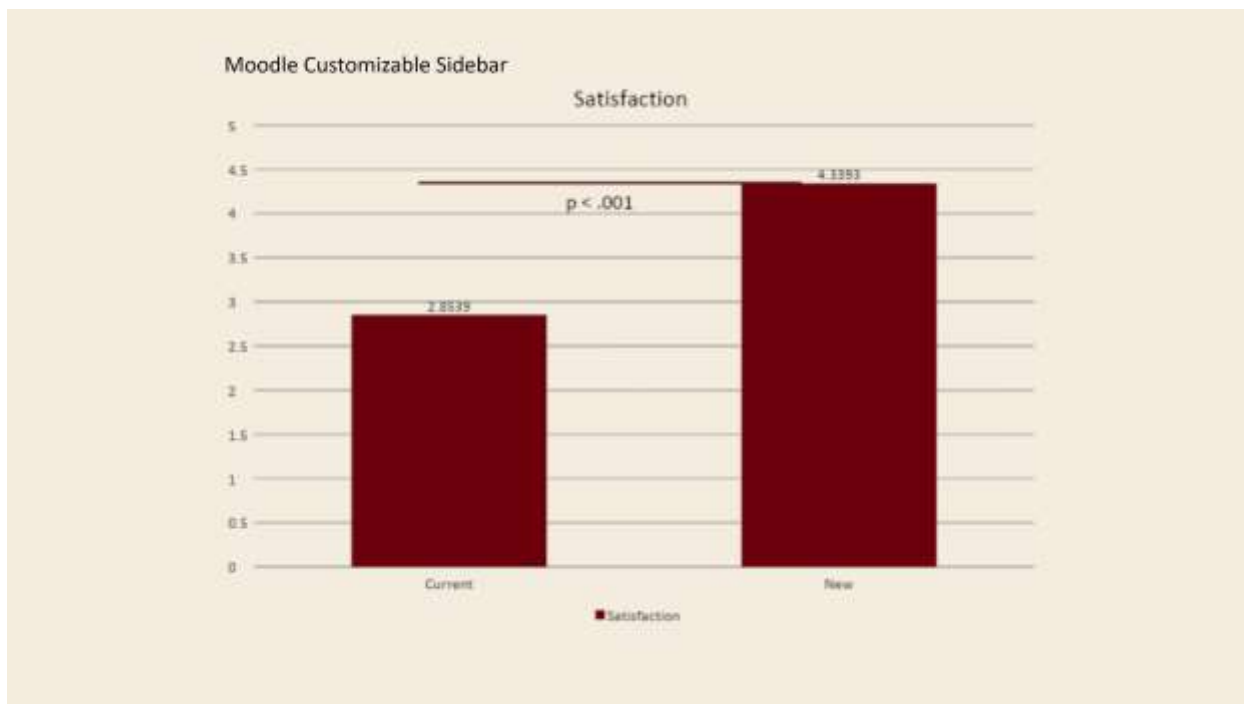
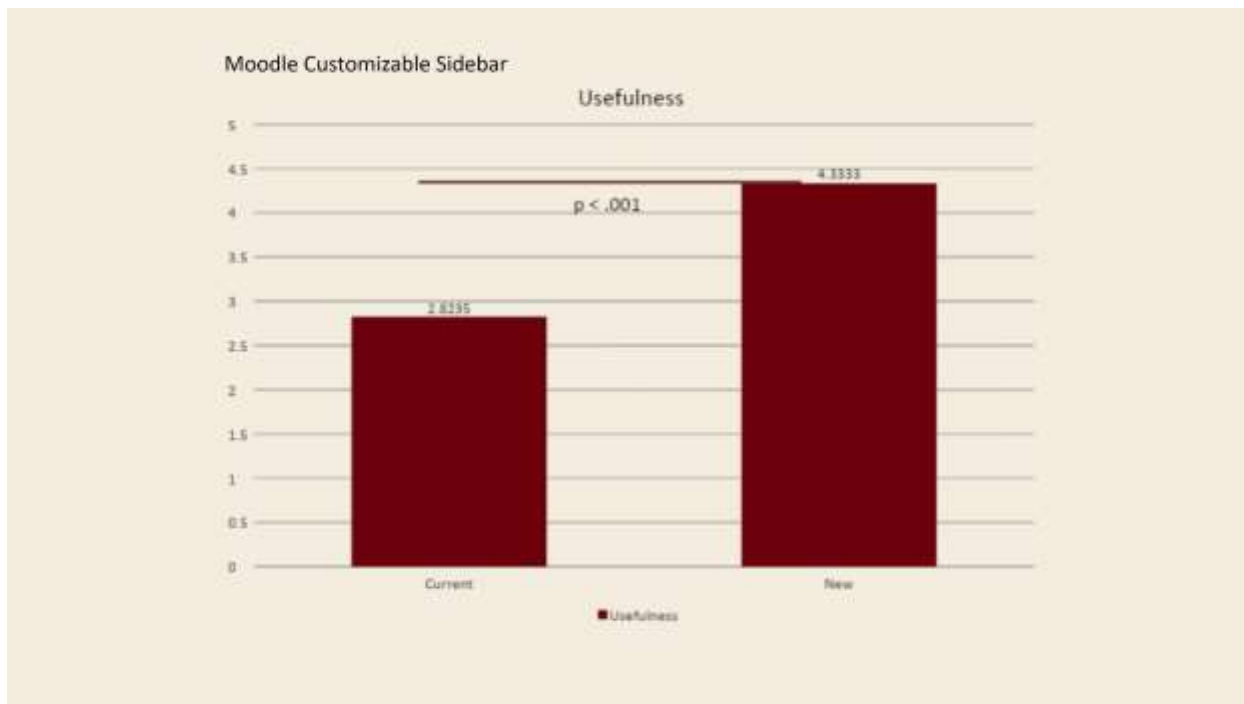
We had 31 participants mostly between the ages of 18-24, identified as male, female, and non-binary, and have been using Moodle for more than 2 years (see Appendix G). For the following images below with the results, it should be noted that the p-value of the comparisons are < 0.001 showing a statistically high significance in usefulness, satisfaction, and ease of use of the new Moodle prototype. With this high significance, Moodle should consider implementing all of our redesigns as our results indicate an improved user-friendly interface for Moodle users.

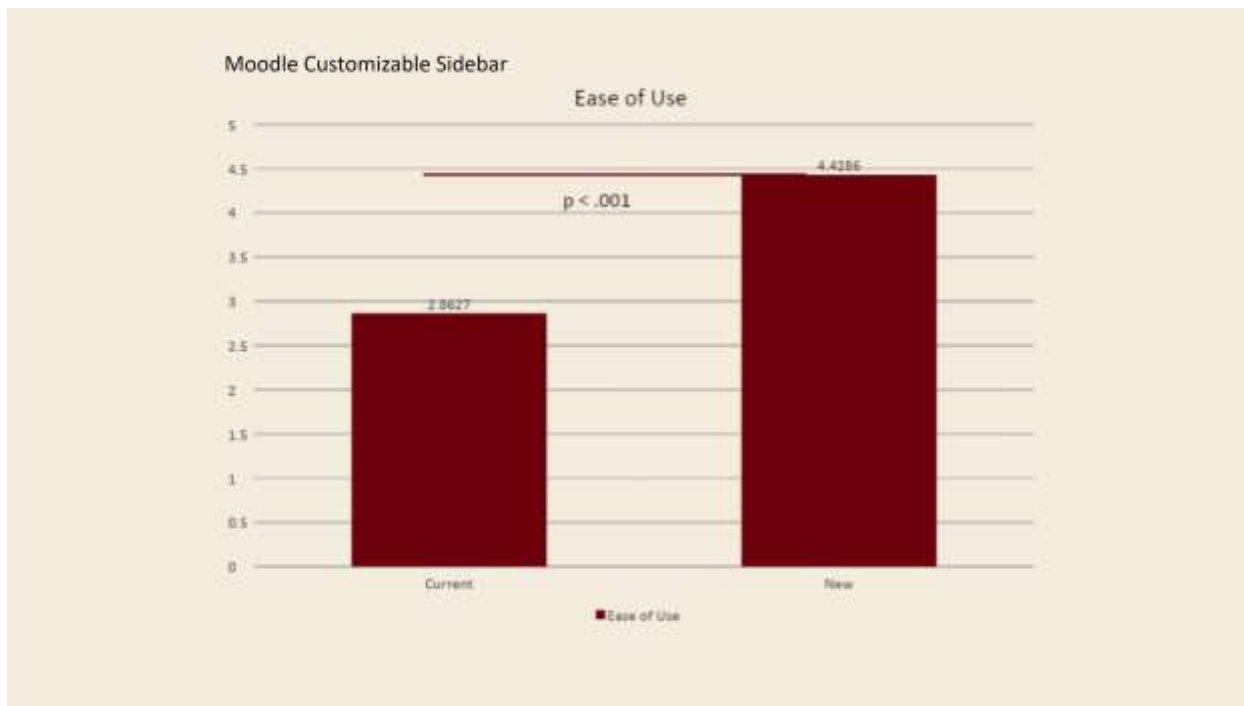
Results











Conclusion

The Moodle website application is an effective tool for higher education regarding checking grades, submitting assignments, and having access to class materials. However, based on our testing results, Moodle can improve the way grades are viewed, the functionality of the calendar, and the organization of the sidebar to improve users' experience.

Are these changes worth it? Yes, because based on our usability tests, the p-value of the comparisons are < 0.001 showing a statistically high significance in usefulness, satisfaction, and ease of use of the new Moodle prototype. In addition, our redesigns addresses users' needs expressed by our interviewees (see Appendix C) during our user research by: 1) having a grades tab that allows users to see their grades in once place, 2) improving the functionality of the calendar feature with a way to keep track of assignments and makes a centralized place for users to locate past and upcoming assignments, as well as adding their own, and 3) giving users the capabilities of renaming, archiving, pinning and deleting courses in order to customize and organize their sidebar.

All in all, the UX researchers, software engineers, and product developers with a project manager at Moodle will benefit from our study to improve not only the interface, but also the daily lives of college students and professors using their interface.

Appendices

Appendix A

Interview Questions

1. How many years have you used Moodle?
2. On average, how many times/per day do you check Moodle?
3. When you check Moodle, what is the primary purpose?
4. On a scale of 1-5 with 1 as poor and 5 as excellent, how would you rate your overall experience with the platform?
5. Have you used other platforms with similar functions as Moodle?
6. What do you like about Moodle?
7. What are your frustrations with Moodle?
8. What are the most notable features that improve efficiency while using Moodle?
9. What are the biggest constraints or missing features Moodle lacks?
10. What are some ways in which Moodle could improve?

Appendix B

Focus Group Script

Hi, [participant's name]. My name is [interviewer's name], and I am going to be conducting this interview session with you today.

First, I would like to thank you for your time and participation in this research study. Now, I will explain why this research is being done. My group and I would like to learn more about the student's perception of Moodle, and ways it can be improved. In this interview session, I will ask you ten (10) questions, with follow-up questions if necessary, about your usage, frustrations, likes, similar platforms you have used and more regarding Moodle.

We want to hear exactly what you think about Moodle in order to improve it. So, please do not hold back as all feedback, positive and negative, will be helpful towards our study.

As we go along, if you have any questions, comments or concerns, please do not be afraid to ask or state them. In the end, all of the information you provide for us will help with improvements of the interface.

With your permission, I would like to record our session. This audio will only be used for the collection of qualitative data purposes. It will not be heard by anyone else except the people working on this project.

If you agree to these terms and conditions, I am now going to ask you to verbally consent. Please say, "I, [participant's name], consent to [interviewer's name] recording our interview session, but that it will only be heard by the people working on the project." Thank you.

Do you have any questions before we begin? Okay, let's begin!

Appendix C

Transcription of Participant's 1 (P1) Interview – Moderator (M1): Ashley Soderberg

M1: Hi, [P1's name]. My name is Ashley Soderberg and I'm going to be conducting this interview session with you today. First, I would like to thank you for your time and participation in this research study. Now I will explain why this research is being done. My group and I would like to learn more about the students' perception of Moodle and ways that can be improved.

In this interview session, I will ask you 10 questions, with follow up questions if necessary, about your usage, frustrations, likes, similar platforms you have used and more regarding Moodle. We want to hear exactly what you think about Moodle in order to improve it so please do not hold back as all feedback, positive and negative, will be helpful towards our study.

As we go along, if you have any questions, comments or concerns, please do not be afraid to ask or state them. In the end all of the information you provide for us will help with improvements of the interface. With your permission, I would like to record our session. This audio will only be used for the collection of qualitative data purposes. It will not be heard by anyone else except the people working on this project. If you agree to these terms and conditions, I am not going to ask you to verbally consent. Please say, "I, [P1's name], consent to Ashley Soderberg recording our interview session, but that it will only be heard by the people working on this project."

P1: I, [P1's name], consent to Ashley Soderberg recording our interview session, but that it will only be heard by the people working on the project.

M1: Thank you. Do you have any questions before we begin?

P1: I don't think I have any questions.

M1: Okay, let's begin. How many years have you used Moodle?

P1: So this is now my eighth consecutive year as a Moodle user. I used it all through high school and now college.

M1: Wow, that's a long time using Moodle. On average, how many times a day do you check your Moodle?

P1: Well, I actually usually keep Moodle open in a tab on my browser. I don't think I ever really close out of Moodle. But, I check it... If I'm going to the class, I'll check it before class. I'll have it

open during class. And then if it's nighttime, and I'm going to do my homework, I'll open Moodle.

M1: Nice. When you check your Moodle, what is the primary purpose?

P1: The primary purpose is usually to see what work I have to do, and then I'll go in more depth to click on links to see what that work is. It's mostly to make sure that I can go to bed without feeling like I'm missing anything. And then, I'll go there for guidelines on how to do said work.

M1: Sounds good.

P1: Just to see what's going on in class that day.

M1: Yeah, just get the updates. On a scale of one to five, with one as poor and five as excellent, how would you rate your overall experience with the platform?

P1: Um, honestly, I'll say four. I don't have a lot of frustrations with it off the top of my head. I'm sure I could come up with some as I reflect deeper, but I feel like at this point, I'm really used to the interface. Like just because I've been interacting with it for so long. So I feel like I have a pretty good handle on it. I know that it can be confusing for some people to figure out at first usage. But once you get it, you get it.

M1: Have you used other platforms with similar functions as Moodle?

P1: So I actually have not. I know that they exist, but like I said, I used Moodle all through high school. So this is the only one... Oh, in middle school, I used Schoology...

M1: Schoology?

P1: I don't know what Schoology is. I think it might have come to me in a dream. I think actually, maybe my high school switched on to Schoology like my senior year or something. I don't know what Schoology is, but I've been on it in my life... Yeah, I think everybody was really mad that my high school switched from Moodle to Schoology like right before we graduated.

M1: Interesting...

P1: So, check out Schoology.

M1: We will. What do you like about Moodle?

P1: Um, I like that it has all of my stuff in one place. I like that. Yeah, it's just like my academic database, like I can just open it and it has all my stuff and all of my classes listed...and then I can click on them and get more details. So yeah, I like lots of the tabs on the sides. I like how you can click on your grades and it shows you everything in the class that's graded like that. You can see the participants, that's always really fun to see. Um, I like...yeah, I like the side tabs, and I think my favorite thing about it is the grade tab. I don't know why, but I just really liked the grade tab because you can just click on it and it's all the graded assignments, because you can also be like, oh, did I miss any assignments?

M1: Yeah because doesn't everything say like turned in or something?

P1: I don't think so. I think you have to click on it. So not to give out ideas for free...but if you had a little like, like, you know how on the main classroom page, it puts a check once you've turned something in?

M1: Yeah, so if you had that on the grades page?

P1: Yeah if you had that on like the Grades page, that would be cool.

M1: That would be cool. What are your frustrations with Moodle?

P1: Um, I do think it's a little like crowded, especially like, so I said I liked the side tabs, but the fact that they have tabs running like, like on the Y and X axis. Like you know, up here, there's like the my courses, like I don't get that.

M1: Yeah, then there's like a bunch of different things.

P1: I'd rather it was just on the side or just on top. Yeah, that's weird to me. And there's, yeah, I feel like there's a lot more things to click on than I actually click on. Like, I know what I use every day and that's what I click on, but there's lots of stuff on the page that I'm not clicking on.

M1: I just remember is that we also use a different thing in London that I can't remember it's called.

P1: Was that Schoology? No, my classroom?

M1: Yeah, my classroom.

P1: Okay, research that one too.

M1: What are the most notable features that improve efficiency while using Moodle?

P1: I feel like... features as in like?

M1: I think like the overall layout of it, like being able to do forums versus assignments.

P1: Oh, yeah, I honestly do like Moodle forums. I think it's cool that they have that feature. No, I think I've said my favorite things, which are I like that it lists my classes all in a little list. And I love the grade feature. And I like...we kind of talked about this previously, but it really is like up to the teacher to make the Moodle effective and helpful. And so I like... I like it if like, if it's separated by like, weeks or days of class then there's the stuff for that day.

M1: So, yeah, that's how I like it, because otherwise I'm wondering 'Oh, do I have homework due?'

P1: Yeah, so I like it when it's under like 'week 12: Thursday' and when things are clumped. Oh, another thing, which is probably outside your power, but I hate when you go to do the reading for a class and it's a PDF, and you click on it and then that takes you to a separate page with a new link and you click on that and then that takes you to like a new viewing thing and then you might have to click on one more thing to actually see the PDF.

M1: Yeah, so like inconsistencies in like when you upload a PDF sometimes like you click it and it just takes you directly to the PDF app or a PDF web page.

P1: Or it automatically downloads... I like it when it automatically downloads

M1: Yeah, like PDF like links sometimes

P1: I don't like it when I try to open up my reading for class and I have to click four more times before I can actually get it...Yeah, what was I talking about? Things I like?

M1: Yeah, like mostly efficient things.

P1: Yeah, most efficient things like classes all together, it would be cool if you could see like all of your grades under one page.

M1: Oh, like a report card thing almost?

P1: Yeah, like a transcript but it's just like Moodle grades.

M1: Yeah, that's a good one because right now you have to click on each class and then click like grades versus just like a general grades page.

P1: Yeah, and that's another thing where I feel like there's just too many tabs in general. Like I think you can go see overall grades, but then you have to click on a class. So yeah, that's cool. All of this stuff with like your past courses... sometimes they're there, sometimes they're not, sometimes you can find them, sometimes you can't. That's weird.

Also, especially because there's lots of inconsistency of what shows up as your classes, if that makes sense. On the sidebar right now there's like three classes I'm taking right now, there's like an English minors group and then there's like the Study Abroad group which still shows up, which is good. Do remember the issues when the study abroad from the fall went away and then we couldn't access that anymore but we still had to like turn in the paper or whatever.

M1: So like, maybe having the ability to choose which things appear on the side bar? Especially because after that they just go off to your dashboard.

P1: Yeah, but then a library exercise I did in my English 110 was there for like three years.

M1: Oh, I same thing. It was there for so long.

P1: Yeah, so maybe if there's a way where you could like select which classes you want to show at a given time. Or star them, or remove them...almost like a little bookmarks baar. So you can just be like 'remove' or 'add.'

M1: Yeah, that sounds good, I like that idea.

P1: What else about Moodle? The Moodle calendar is stupid because if the professors don't fill it out, right, then like, it doesn't do anything and some stuff is there and some stuff isn't and it's just weird. So get rid of the Moodle calendar for sure. I hate that thing. Or just make a really good one that automatically shows everything where there's like a drop box.

M1: It would be so nice if something like could sync it to Google Calendar so it would just like upload everything automatically.

P1: Ugh, that would be so high tech and awesome.

M1: I mean, that's what Google Classroom is.

P1: But we're not talking about that.

M1: Yeah, we're not talking about that. What are the biggest constraints or missing features Moodle has?

P1: I wish there was something that just told me what was due in the class like on the homepage, if it was just like, here's everything that has a submission box for the next week. You know what I mean? And maybe that would be a little crossover with a calendar.

M1: Do you think that this would maybe be something closer to an agenda?

P1: Yeah, maybe. Like I want a coming up next section. Does that makes sense?

M1: Yeah, that makes sense. It's kind of like how people use like the stickies app or like something to have a to do list.

P1: Maybe, yeah. I want a Moodle to do list and I want it to be organized by day.

M1: Nice.

P1: That would be so great, because that's how my brain works.

M1: Yeah, no I agree. What are any other ways that Moodle could improve?

P1: Be less ugly? Actually, I think the love Moodle is pretty as a picture of Elon on it. Um, yeah, I think overall, just less weird things to click on. More things that I want to click on easily available. Some sort of unified, 'here's what's due in your classes' section. Yeah.

M1: Yeah. Do you have any other final thoughts?

P1: No.

M1: Sounds good, well thank you for meeting with me.

P2: You're so welcome.

Transcription of Participant's 2 (P2) Interview – Moderator (M2): Olivia Archer

M2: Hi, [P2's name]. My name is Olivia. And I'm going to be conducting this interview session with you today. First, I'd like to thank you for your time and participation in this research study. Now I'm going to explain why this research is being done. My group and I would like to learn about students' perceptions of Moodle, and ways that can be improved. In this session, I will ask you 10 questions with follow-up questions if necessary, about your usage. Frustration likes similar platforms you have used regarding Moodle. We want to hear exactly what you think about Moodle in order to improve it. So please do not hold back as all feedback positive and negative is extremely helpful in our study. As we go along. If you have any questions, comments or concerns, please do not be afraid to ask or state them. In the end, all the information you provide will help us with improvements of the interface. With your permission, I would like to record our session. This audio will only be used for collecting qualitative data purposes. It will not be heard by anyone else except for the people working on this project. If you agree to these terms and conditions, I'm now going to ask you to verbally consent please say I P1 consent to Olivia's recording in a session

P2: I [P2's name] verbally consent to our recording of this session.

M2: Thank you. Do you have any questions before we begin? No? Let's begin. How many years have you used Moodle?

P2: This will be my fourth year of using Moodle.

M2: Great on average, how many times per day do you check Moodle?

P2: Recently, once. This is because I'm only taking one half a semester class with a normal class load. I would typically check Moodle about three to four times a day.

M2: And when you check Moodle, what is the primary purpose?

P2: The primary purpose is to see either what we are doing in class that day, or to turn in an assignment slash get instructions for that assignment

M2: Okay. So on a scale of one to five, with one is poor, and five is excellent. How would you rate your overall experience with the platform?

P2: I would rate it as a three.

M2: Could you tell me a little bit more about this rating?

P2: I would explain that Moodle is good in its organization. I feel that the dashboard where you see all your classes is very clear. And I think that it depends on the professor how good your Moodle is, because some professors have really well set up Moodles like go by weeks, you know exactly where everything is, whereas other professors don't. So I can't really blame Moodle for that. But I think that Moodle could do a better job of having a place where all of your deadlines coming up are. There's not really a calendar that has like all of your classes and then all of those assignments on them but then again, that's also up to the professors.

M2: Got it. So what do you like about Moodle?

P2: Um, I enjoy that Moodle is a place where you can write discussion boards and turn in assignments and see your syllabus everything's centrally located as long as the professor uses it and I think that it is relatively well organized.

M2: So what are your frustration to Moodle?

P2: My frustrations with Moodle include I don't enjoy taking exams or anything like that on Moodle, it's very confusing. Sometimes it takes a while to load the questions which is difficult I find that the format is a little bit confusing as well.

M2: Could you specify what you mean when you say format?

P2: Yes, good. So there's like fill in the blanks or matching but sometimes you can't see all of your like words in a word bank and it's there like on the next page which is very confusing and that's how I would say it's got it

M2: Okay, so what are the most notable features that improve efficiency while using Moodle

P2: I would say how it automatically goes to your dashboards of your classes that's pretty efficient. It wouldn't be annoying to have to go to like the homepage of Moodle and then to your classes your classes are all right there which is good.

M2: Are there any buttons or shortcuts you can think of that may like improve this efficiency?

P2: Again, that like an assignments tab that I was saying or like a Calendar tab that would improve efficiency if you're trying to see all of your due dates in one place, whereas you have to click individually to see them right now.

M2: Got it. So that kind of leads to the next question of what are the biggest constraints or missing features that Moodle lacks?

P2: Definitely the calendar with all of your assignments. That is definitely missing. That's the biggest one, I don't think anything else is missing.

M2: So overall, how would you say Moodle could improve itself, it can be from test taking it can be to including more buttons, shortcuts, anything like that?

P2: I would say more organization for assignments that have to be submitted through Moodle would be good with like a calendar or assignments sheet or something for tests. Honestly, I don't think that's Moodle spot. I think taking exams online is just like, finicky, you're gonna get bad Wi Fi and stuff like that. I can't really blame Moodle for that. Um, and oh, the last thing I would say is I wish Moodle would delete your old classes, because sometimes my class dashboard is so long, because it still has like global which I took freshman year up. So it would improve efficiency to only have the classes you're taking that semester and then Moodle deletes them, after you're done with them.

M2: Do you think it would be helpful to have those archived so you could go back to them or you're just saying delete them?

P2: Totally, you could archive them, um, just not in your class dashboard, because that's not true. Like you're not taking that class. Additionally, they put like Title Nine stuff on our class dashboard, which is like not a class.

M2: That's interesting. Could you talk a little bit more about what that is?

P2: So what that is, is it's like a little video, like two videos, and then you answer some questions about appropriate conduct in athletics.

M2: Oh, so this appears on your page because you're an athlete but didn't enroll in that?

P2: Yes, I'm an athlete. So some people's Moodle pages may be different. They can be very different. Mine particularly has Title Nine.

M2: Got it, which is not a class, but it takes up a chunk of space.

P2: Usually there's a weird thing on my Moodle that says like Policy Studies minors, which I am policy studies minor, but that's not a class.

M2: Right. But it's under classes and you didn't sign up for that.

P2: I didn't sign up for that. I just like my classes to be in my class dashboard. That's my opinion. Okay, that's all we have here.

M2: Great. So do you have any other questions? No. All right. Perfect. That wraps it up. Thank you so much for your time.

P2: Thanks.

Transcription of Participant's 3 (P3) Interview – Moderator (M3): Shaina Catchings

M3: All right. Hi, [P3's name], how are you doing today?

P3: I'm doing well. How are you?

M3: I'm good. Well, my name is Shaina Catchings, and I'm going to be conducting this interview session with you today. First, I would like to thank you for your time and your participation in this research study. Now I'll explain why this research is being done. My group and I would like to learn more about the students' perception of Moodle and ways that it can be improved. In this interview session, I will ask you 10 questions, with follow up questions if necessary, about your usage frustrations, likes, similar platforms you have used and more regarding Moodle. We want to hear exactly what you think about Moodle in order to improve it. So, please do not hold back as all feedback, positive and negative, will be helpful towards our study. As we go along, if you have any questions, comments or concerns, please do not be afraid to ask or state them. Any and all the information that you provide us will help with improvements of the interface. With your permission, I would like to record our session. This audio will only be used for the collection of qualitative data purposes. It will not be heard by anyone else except for the people working on this project. If you agree to these terms and conditions, I am not going to ask you to verbally consent. Please say, " I, [P3's name]."

P3: I, [P3's name].

M3: "Consent to Shaina Catchings."

P3: Consent to Shaina Catchings.

M3: "Recording our interview session."

P3: To record our interview session.

M3: "But that it will only be heard."

P3: But that it will only be heard.

M3: "By the people on this project."

P3: By the people on this project.

M3: Thank you. Do you have any questions before we begin?

P3: No, I'm excited.

M3: All right, let's begin. How many years have you used Moodle?

P3: I have used Moodle for at least five years at least.

M3: You guys use Moodle at UNCG?

P3: We used Moodle. I used Moodle when I was taking classes at a community college. So that was like my senior year of high school. I was dull enrolled, so I used Moodle there. I used Canvas actually for UNCG. But then I started working at two places that used Moodle. So, I've been like going back and forth between those two interfaces.

M3: Okay, so like, since you have used like other platforms, how would you describe or compare and contrast Moodle and Canvas?

P3: Yeah, so Canvas for me is the better learning management system. And a lot of that has to do with the intuitiveness or intuition. I'm not sure which way of Canvas because I mean, I can put my homework on the calendar and it's connected to the course. And I know that you could do the same on Moodle, but I think that design on Canvas makes more logical sense to me than the one on Moodle. So honestly, I would say in comparison, Moodle was a bit inferior.

M3: Okay. So on average, how many times a day do you check Moodle?

P3: I checked Moodle every day so that I can make sure I turned to my assignments.

M3: Okay, when you check Moodle, what is the primary purpose other than like, you know, checking your assignments? Do you check your grades? Anything else?

P3: Yes, I definitely use Moodle to check my grades. I check Moodle to look at comments that different professors have left on different assignments. I check Moodle to see if there's any resources that I need to look into. So for example, like our reading assignments are on Moodle, but also they may have some link to articles to somewhere else. So I had to look on that for that.

M3: Good. So, on a scale of one to five, with one as poor and five as excellent, how would you rate your overall experience with Moodle?

P3: I would, I would give it a two and a half. Because Moodle does function, and it does allow you to do what you want to do. It's just hard to do.

M3: So in that case, what are your frustrations with Moodle with that low rating?

P3: My frustrations with Moodle is that the interface just appears old to me. Like I feel like it was created in 2008. And for us to be not only interactive media students, but like Millennials or whichever generation we're in, like interfaces are constantly changing every day and they're

more intuitive. They're flashy or they're easier to navigate. And I don't think that Moodle meets any of those standards. I think that it just solely functions.

M3: So, you feel like it has constraints?

P3: Yes. Oh, that's a fact. There are a lot of constraints on Moodle.

M3: So what are the biggest constraints or the missing factors that Moodle lacks?

P3: I think Moodle...I want to say the biggest constraint is probably on design. Because when I think about the difference between Canvas and Moodle, I do think the flashing is like the different colors, the different graphics are things that you can include on the course, you know, you can, you can pretty much play with Canvas, it appears that you can play with Canvas. So the things that you include, like video links, different things like that, and they actually be embedded in the interface. Whereas like with Moodle, I mean, it's just a bunch of hyperlinks. A lot of times you can't really embed anything on there. So it just doesn't seem to be an up to date sort of situation. So I guess to answer your question, I think the design is the biggest constraint, and possibly, like newer technologies of being able to embed things.

M3: Okay. And when you mean design, do you mean like functionality? Well, I know, you mean functionality, but do you also mean visually?

P3: Yes, for sure. Okay. Yes, I definitely mean visual design as well. For sure.

M3: Okay, so we talked about, I don't want to say negative, but you know, the kind of negative aspects. Let's talk about like the positive. What do you like about Moodle?

P3: I think what I like about Moodle is for most like institutions, it's free. And when I say free, I mean, it's free or cheaper than other learning management systems. And I definitely understand that it's, it does what it needs to do, like you can upload your assignments. It's very functional. You can message with your professor. So I love that feature. You can have links to different resources on campus. I know that, you know, if you need Disability Resources, a lot of our faculty and staff put those information on Moodle. I like that Moodle has like that single sign in piece where if I'm signing into my Elon account, I can also sign into Moodle, and I don't have to keep doing the whole push. Let's see.

M3: I know it's not that much to list but like.

P3: Yeah, to your point the positives is that it does work. Like I can't say that I'm ever having to call my professional like, oh, this thing doesn't work on Moodle. It does, it just don't look good.

M3: So what are the most notable features that improve the efficiency while using Moodle?

P3: I think that the navigation in Moodle is a very helpful feature. Specifically like the drop down for your classes, I think that's helpful. And I think even how professors decide to organize their courses are helpful. So again, the navigational features. I think it's very easy to submit assignments. So that whole piece about like add submission, and then drop file in or upload file. I think that's very helpful and efficient. And all of that, I do think that the setup of the of the interface is very task oriented. And I do think that it allows you to complete the task. So in that regard, I think the organization of the site is efficient in that way.

M3: Okay, so then what are some ways in Moodle could be improved, like if there's certain features that you will want to be included or added that he doesn't have? Or even like, a feature that they have, but could be built upon? Like for an example that calendar?

P3: Yeah, that's actually what I was gonna talk about the calendar. I think there's something about the calendar that just doesn't do it for me, and I think it seems incomplete in a way I don't know if, if part of that is on like the teachers and that they're not uploading all the assignments and it doesn't come up on the calendar or if there's some sort of disconnect, but like, I don't rely on my Moodle calendar at all. Whereas not to be you know, disrespectful. But with Canvas, like I knew that all my assignments were on there and and it would check my stuff off if it, if it was complete. So I felt a little bit more safe using Canvas as opposed to Moodle, because Moodle seems to be a little broken. And and again, I can't I don't know who to blame that on. I don't know if that's the teacher or the interface, but it just seems unbroken to me. And what else can we prove? Okay, I mean, we talked about the design, I do think that the design could be improved to be a little bit more customizable to the course.

P3: And I'm not sure if Moodle has an app. Does Moodle have an app?

M3: I think it does, but a lot of students don't have it because, again, functionality and they don't really like it.

P3: Yeah. Yeah, so I would say that one of the main things would be the calendar, the design and the overall I guess, flow maybe of the website.

M3: Are there any last like, questions you have for me, comments and concerns regarding Moodle, and how like it can be redesigned and improved?

P3: Honestly, I think that, this is for the Moodle people, I think that if Moodle was just it Moodle just looked prettier. Really, I think that they wouldn't be hated as much, but it looks like a machine. Interestingly, enough. Canvas me does not look like a machine. Moodle does and Blackboard can kind of be similar as well. So like, yeah, I think that would be the last thing I would have to say. The functionality like I can work with that I get that sometimes technology and stuff doesn't work, but the design I got to be there.

P3: So that's all I got for you.

M3: Thank you so much. This does conclude our session, and I definitely appreciate you. If we have any more questions, concerns or comments for you, we will reach out back to you. But this does conclude our session. Thank you very much.

P3: Thank you.

Appendix D

Pre-Survey Questions

1. How old are you?
 - a. Under 18
 - b. 18 – 24
 - c. 25 – 34
 - d. 35 – 44
 - e. 45 – 54
 - f. Over 55
2. What gender do you identify with?
 - a. Male
 - b. Female
 - c. Non-binary/ Third Gender
 - d. Prefer Not to Say
3. How long have you been using Moodle?
 - a. Less than 1 Year
 - b. 1 – 2 Years
 - c. 2 – 3 Years
 - d. 4+ Years
4. For the following statement, please indicate your agreement: “ I use all of the features on Moodle?”
 - a. Strongly Agree
 - b. Somewhat Agree
 - c. Neither agree nor disagree
 - d. Disagree
 - e. Strongly Disagree

Appendix E

Testing Prompts for Randomization

Please interact with the **Current Moodle Grades Tab** by clicking the link [here](#). Afterwards, answer the following statements based on your experience using this feature.

Please interact with the **New Moodle Grades Tab** by clicking the link [here](#). Afterwards, answer the following statements based on your experience using this feature.

Please interact with the **Current Moodle Calendar Feature** by clicking the link [here](#). Afterwards, answer the following statements based on your experience using this feature.

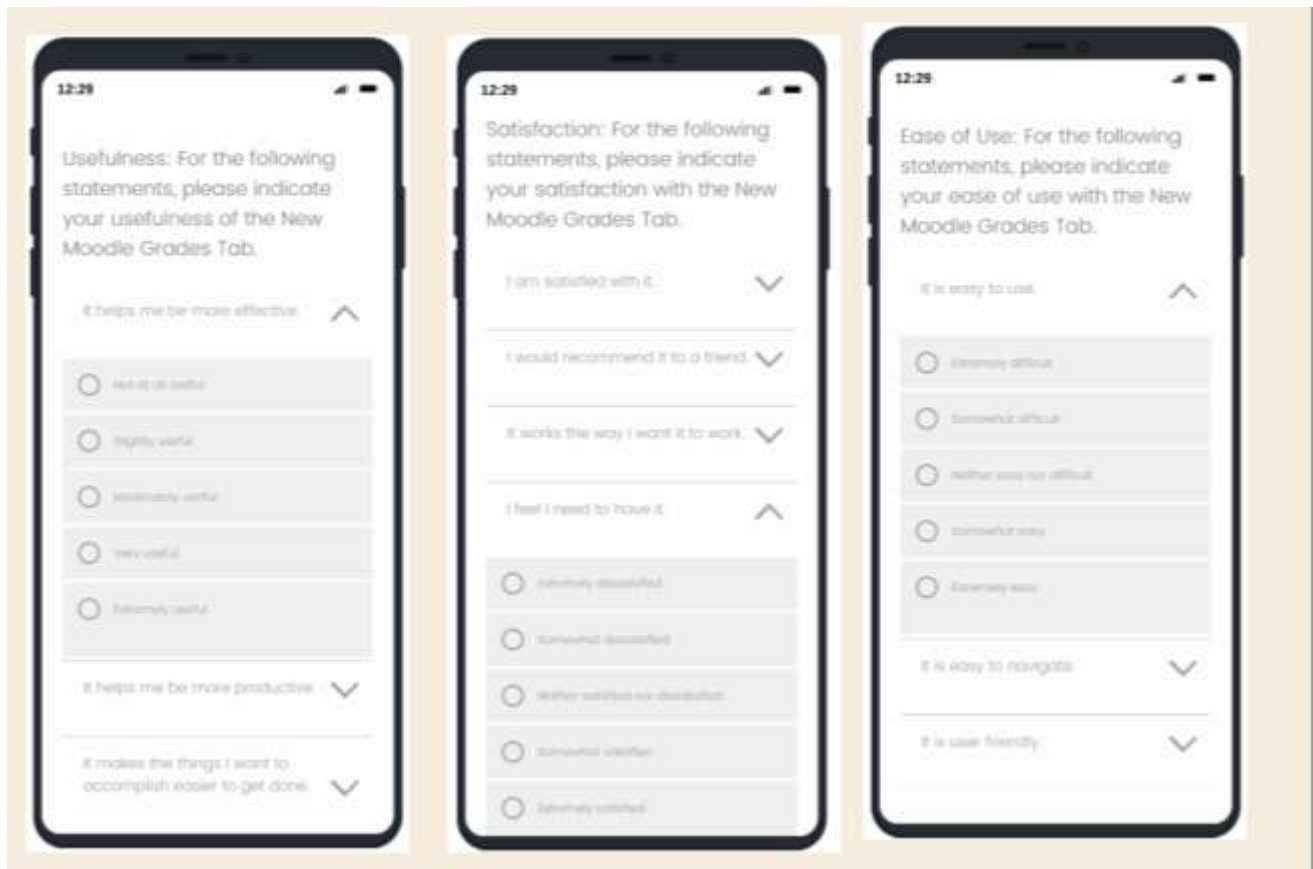
Please interact with the **New Moodle Calendar Feature** by clicking the link [here](#). Afterwards, answer the following statements based on your experience using this feature.

Please interact with the **Current Moodle Sidebar** by clicking the link [here](#). Afterwards, answer the following statements based on your experience using this feature.

Please interact with the **New Moodle Customizable Sidebar Feature** by clicking the link [here](#). Afterwards, answer the following statements based on your experience using this feature.

Appendix F

Measurements for User Experience and Usability



Appendix G

Overview of Survey Participants

