Usability Pilot Test

Alma Erden

Katherine Bell

Leslie Kim

Jonathan Tinker-Lamothe

Department of SISLT, University of Missouri

IS_LT 9421, Usability of Information Systems and Services

Dr. Doug Kueker

March 13, 2022

Part 1

Creation of User Tasks

For evaluating the usability of myZou, our team has selected the following tasks that will be assigned to the users. We will observe them while performing those tasks using the think-aloud technique:

Task 1: Add ISLT 7315 to your enrollment shopping cart for the Fall 2022 semester.

Task 2: Find your student ID number.

Task 3: View your graduation application status.

Task 4: Inform the system of your permanent address.

Task 5: Check the grades for enrolled courses in the Fall 2021 semester.

Rationale for the selected tasks

These are all essential tasks that the users would realistically do while using myZou. They seem applicable to a wide range of students in the user base. Task 1 is important because the users need to know how to add courses to their enrollment shopping cart before starting their semester. The student ID number and permanent address in tasks 2 and 4 are necessary information for the student account. Task 3 is important when the user needs to apply for graduation at the end of the program. As for Task 5, any students would want to know the final grade for their enrolled courses in the given semester. All of these tasks are designed with the common student needs in mind. When we evaluate the usability of myZou, we believe that our observation of the user engagement with the tasks will provide valuable data regarding the usability metrics of effectiveness, efficiency, and user satisfaction.

The usability metrics selected

The usability metrics we selected for this test are effectiveness, efficiency, and satisfaction. These metrics were selected because UM students must swiftly perform the test tasks without significant errors to preserve the functionality of their student accounts. Firstly, we will calculate the rate of completion/success for each task to measure effectiveness. Next, we will calculate the average time spent on each task to measure efficiency. Finally, we will measure the overall user satisfaction by asking users to rate the difficulty of each task in a three point scale survey and administering the System Scale Survey (SUS). Furthermore, after each task we will ask users two follow-up open-ended questions to comment on their likes and dislikes about each task and indicate any design suggestions.

Part 2

Procedure for the Pilot Test

In preparation for the study, each researcher would either log in to their myZou account or provide the user with their (the researcher's) login information, depending on whether the test is being conducted in-person or virtually, respectively. The pilot test will commence after the orientation script has been read. Tasks will be administered in the following order: add ISLT 7315 to your enrollment shopping cart for the Fall 2022 semester; find your student ID number; view your graduation application status; inform the system of your permanent address; check the grades for enrolled courses in the Fall 2021 semester. During the pilot test, users will elaborate on their cognitive processes using think-aloud protocols. For ease of recording these cognitive processes during the completion of tasks, researchers will make an audio/video recording of their user. Additionally, researchers will record the total time to complete each task for each user. Once all 5 tasks have been completed, a short System Usability Scale (SUS) survey will be

administered to gain further insight into the users' experiences. After each researcher has finished administering the usability pilot test to their user and recording the subsequent data, the results will be compared and compiled, and a report will be constructed.

Orientation script

Thank you for agreeing to participate in this usability pilot test. To begin, you will be asked some demographic questions, including your age and student status. During the test, you will be asked to complete five activities using the University of Missouri's online student information system, myZou. Keep in mind that it is not your ability to interact with the system that will be tested. The purpose of this study is to assess whether or not this system is easy to use for students. You will be given myZou login information to access the main page, but you will not be told how to complete the activities. The purpose of conducting this test is to see how easily you can figure out and complete the tasks by yourself. As you complete each task, you will be required to describe your thought process out loud. After each task, you will be asked to rate the difficulty of the completed task and comment on likes and dislikes. After observing your test, the observer will provide you with a brief survey to evaluate your experience using myZou. (See **Appendix A** for the detailed Think-Aloud protocol.)

Cognitive processing data gathering strategies and the rationale for their usage

Our team decided on using a combination of techniques for user testing. We will have the user perform five tasks with the think-aloud technique. Following each task, the user will answer a question on task-level satisfaction to rate the difficulty of the task. In addition, they will answer two follow-up questions after each task regarding their likes and dislikes and the overall suggestions they might have. At the end of the think-aloud observation, the user will complete a test-level satisfaction survey SUS (system usability survey).

Think-aloud: During the think-aloud, each participant will be assigned five tasks and be required to say everything out loud that they are thinking and trying to do (Ericsson & Simon, 1980; Jääskeläinen, 2010). Using a think-aloud technique while observing our users interacting with myZou would provide valuable qualitative data to evaluate the usability criteria of the site. This data would help our team not only understand the "what" but also the "why." That means that along with understanding what tasks the user could complete or not we could also gather further information about the usability and interaction design problems.

Task-level satisfaction: After completing each task (successfully or not), users will be asked a single question to rate the task's difficulty on a three-point scale with 1= Easy, 2= Medium, 3=Difficult. This technique would assist with gathering quantitative data for the task experience. Sauro (2011) emphasizes the importance of using task-level satisfaction metrics because it immediately flags a difficult task.

Follow-up questions: Users will comment on their likes and dislikes on each task and indicate any further suggestions regarding enhancing the user experience. Below are the original follow-up questions after each task:

1. What are your likes and dislikes regarding this task?
2. Do you have any suggestions or recommendations regarding this task?

Test-level satisfaction -SUS (System Usability Scale): At the end of the think-aloud observation session, users will complete (SUS) a test-level satisfaction survey. It consists of a 10 item questionnaire with five response options for respondents from Strongly Disagree to Strongly Agree and will be built in Qualtrics. (See **Appendix C**). SUS does not intend to diagnose usability problems. However, the tool quantitatively measures the users` overall experience on the perceived usability (Sauro, 2011). SUS's results combined with qualitative and

quantitative data collected during the think-aloud will comprehensively inform our usability evaluation of the myZou site.

Part 3: Observation

Each of the team members observed one user while performing the selected tasks with a think-aloud technique. See **Appendix B** for the think-aloud summary.

Part 4 : Usability Pilot Test Report

User summary

Each team member identified and interviewed an individual for user testing. One female and three males volunteered to be observed with the think-aloud technique, answer the difficulty rating question after each task, two follow-up questions regarding their likes and dislikes and design suggestions. Finally, the users completed the SUS (System Usability Scale) survey. (All four users are living in the United States (Iowa, Virginia, New York, and Missouri). They range in age from 22 to 63 and vary by profession (college student, math teacher, college graduate, and homemaker). Three of our users are potential graduate students, and one user is planning to return to school. All users are either proficient or expert-level in their use of technology. The diverse sample of users gives a more in-depth understanding of the entire body of myZou users. (See **Appendix B** for detailed user profiles.)

Summary of usability test

User Tasks

The users performed the following tasks while our team observed them interacting with myZou with the think-aloud technique:

Task 1: Add ISLT 7315 to your enrollment shopping cart for the Fall 2022 semester.

Task 2: Find your student ID number.

Task 3: View your graduation application status.

Task 4: Inform the system of your permanent address.

Task 5: Check the grades for enrolled courses in the Fall 2021 semester.

Rationale

These are all essential tasks that the users would realistically do while using myZou. They seem applicable to a wide range of students in the user base. Task 1 is important because the users need to know how to add courses to their enrollment shopping cart before starting their semester. The student ID number and permanent address in tasks 2 and 4 are necessary information for the student account. Task 3 is important when the user needs to apply for graduation at the end of the program. As for Task 5, any students would want to know the final grade for their enrolled courses in the given semester. Finally, designing the tasks with the common student needs in mind ensured the full engagement of our users during observations. Thus, our team was able to discover valuable data regarding the usability metrics of effectiveness, efficiency, and satisfaction.

Steps of the protocol

In preparation for the study, each researcher had either logged in to their myZou account or provided the user with their (the researcher's) login information, depending on whether the test was in-person or virtually done, respectively. The pilot test commenced after the orientation script had been read. The tasks were administered in the following order: add ISLT 7315 from your enrollment shopping cart for the Fall 2022 semester; find your student ID number; view your graduation application status; inform the system of your permanent address; check the grades for enrolled courses in the Fall 2021 semester. During the pilot test, users elaborated on

their cognitive processes using think-aloud protocols. For ease of recording these cognitive processes of the users during the completion of the tasks, researchers made an audio/video recording of their users. Additionally, the researchers recorded the total time it took to complete each task for each user. Once all 5 tasks were complete, a short System Usability Scale (SUS) survey was administered to gain further insight into the users' experiences. After each researcher has finished administering the usability pilot test to their user and recording the subsequent data, the results have been compared and compiled to construct the report.

The usability metrics used for the pilot test

The usability metrics we selected for this test are effectiveness, efficiency, and satisfaction. These metrics were selected because UM students must be able to perform the test tasks swiftly and without significant errors to preserve the functionality of their student accounts. Our metrics for measuring effectiveness were the completion rate of each task/success. We have compared the average time the users spent on each task to measure efficiency. Finally, we have measured user satisfaction by utilizing the three-point scale survey and administering the System Scale Survey (SUS). Furthermore, after each task we asked users two follow-up open-ended questions to comment on their likes and dislikes about each task and their suggestions about the overall design.

Summary of the think- aloud and follow-up questions results

Task 1: Add ISLT 7315 to your enrollment shopping cart for the Fall 2022 semester.

The average time spent to complete this task was approximately 2 minutes 54 seconds. This task generally took longer for all 4 users to complete, given that the task itself required more steps. In terms of difficulty, users generally thought this task was fairly easy; 3 out of 4

users gave the task a difficulty rating of 1, while the 4th gave a rating of 2. That said, there were still several user complaints, two of which dealt with the shopping cart feature. One user disliked that there was no clear button labeled “Shopping Cart,” while another was not familiar with the term and therefore found it to be vague and confusing. Besides this, one user felt there was too much blank space and not enough lines to divide the information. Another felt there was too much information being communicated on one screen. Furthermore, some of this information proved vague and confusing, both in meaning and in use. For example, the “Enter Class Nbr” field, as seen in Figure, does not correspond with the actual course number (ex: IS_LT 9421 of a given course. Terms such as “Permission Nbr” (shown in Figure 6), which may not be applicable to the wider student user base to begin with, are left entirely ambiguous in meaning. This, along with the fact that the cursor is automatically placed in the field corresponding with “Permission Nbr” when the Enrollment Preferences page is loaded immediately after selecting a class, confused one of the users.

Task 2: Find your student ID number.

The average time spent to complete this task was approximately 38 seconds. In terms of difficulty, users generally thought this task was fairly easy; 3 out of 4 users gave the task a difficulty rating of 1, while the 4th gave a rating of 2. For the most part, no errors were identified by the users. Three of the users found this task to be fairly straightforward and intuitive. One user, however, struggled a bit and clicked on the wrong box on the myZou homepage twice before selecting the correct link and locating the student ID number. This user felt the transition between the homepage and any of the specific pages therein could have been made more intuitive.

Task 3: View your graduation application status.

The average time spent to complete this task was approximately 43 seconds. In terms of difficulty, users generally thought this task was very easy, as all four users gave the task a difficulty rating of 1. One user even said they thought this task was too easy. There were no errors identified by the users. One user commented that they liked how clear the site's terminology was. There were no dislikes related to this task identified by the users.

Task 4: Inform the system of your permanent address.

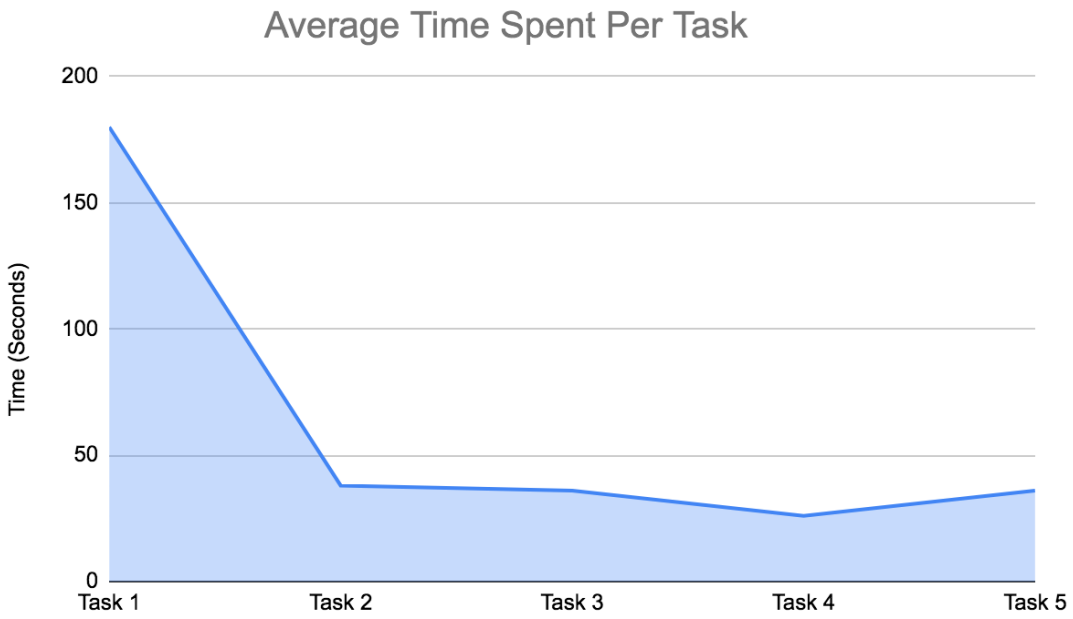
The average time spent to complete this task was 26 seconds. In terms of difficulty, users generally thought this task was (Easy) with a rate of 1. All four participants responded that there were no identified errors or problems during the completion of the task. As for their comments on likes and dislikes, both participants 2 and 4 responded that the task was easy. Participant 1 responded liking the icon-based navigation and finding the feedback showing up when hovered over the icon helpful when proceeding with the task. Participant 4 responded having no overall comments.

Task 5: Check the grades for enrolled courses in the Fall 2021 semester.

The average time spent to complete this task was 36 seconds. In terms of difficulty, users generally thought this task was (Easy) with a rate of 1. Some participants responded having experienced errors or problems, but some did not during the completion of the task. Participant 1 responded that "when clicking on Academic records on the main page, the list of classes taken appeared together with grades (see Figure 4). Participant 1 explained having found it unnecessary to search again under the 'grades' subcategory under academic records. Participant 3 responded that the default list order was confusing because it was displayed by course number rather than the semester. Participant 3 also mentioned the sorting options missing. Participants 2 and 4 responded having experienced no errors or problems. As for their comments on likes and

dislikes overall, the comments varied. Participant 1 responded having found the grades separated by certain semesters unnecessary because the grades are visible for all the finished semesters on the first screen of the academic records. Participant 2 responded that the change term button was not immediately identifiable. Participant 2 suggested that it would be more user-friendly to enable all terms to expand and collapse. Participant 3 responded that the task was not too hard, but it would have been preferable if the default order was by the semester instead of the course numbers. Participant 4 responded that the system was overall simple, and it was easy to use as long as the nature of the task was understandable.

Figure 1



Summary of SUS results

Table 1: Survey Responses

Respondent	**SUS Score**
Respondent 1	90

Respondent 2	100
Respondent 3	82.5
Respondent 4	75
Average	**86.9**

The scores for each participant were: 90, 100, 82.5, and 75, with a combined average of 86.8. (See **Appendix C** for the raw data and the converted scores). Even if the lowest score is well above the generally accepted "passing" SUS score of 68, still it indicates that the site can be improved in terms of usability and user experience. Although the survey did not provide insight into specific problems, it was a reliable method that provided quantitative data on the overall ease of use of myZou from a user perspective.

Users frequently rated learnability-related questions highly but scored lower on interface intuitiveness questions. One user found the system mildly cumbersome, and another found the functions poorly integrated, both of these scores support the comments made during think-aloud by participants. Even though the scores were overall very high, we conclude that minor issues could be addressed to improve the usability and user experience of myZou.

Conclusion

After we revised the combined results from the think aloud, follow-up questions and SUS, we concluded that myZou is a usable website. Although the time spent on each task varied, each user took progressively less time to complete each task, which may indicate that the first task was the most difficult. The majority of difficulty ratings were low. Most user problems were generally associated with the language used by the system and the overall design of the interface. In terms of effectiveness, users showed a 100% completion rate for all tasks with relatively few

errors. Every user scored from the SUS survey was well above the passing level, which indicates that myZou is overall highly usable. We recommend that, especially for tasks 1 and 5, the design of the interface and the language contained therein be made more intuitive and more easily recognizable by the user.

Lesson learned

Based on our results and user comments, our users felt they were being tested instead of the system, which made us reconsider the phrasing of our orientation script and commit to emphasizing the purpose of the test. It might improve the test if our users completed the same task twice in the beginning to the end because we can compare how the user's comfort level with the system increased over time. Another thing we would improve in terms of the tasks is designing them with the researchers' pre-existing information within myZou in mind. For example, in Task 4, we found that because our own addresses were already entered into the system, the users felt no need to make any changes. For the/a real usability test, we would temporarily delete our address and let the user have a more realistic experience by entering their own address.

Individual Reflections

Jonathan Tinker-Lamothe

I would say one of the most important things I learned from this pilot test is that no matter how good you think the test is in theory, there's a whole slew of complications that can come about from putting it into practice. There's no way to be completely sure that the tester will perfectly understand the purpose of the test, or that the data you get will actually be constructive. Secondly, I was a lot more uncertain about interpreting the results of the data than I expected. I was almost suspicious of how positive our results were. Finally, I learned that there's really no

such thing as a perfect usability test, at least not one that can apply to all users, but I feel a lot more confident about making a better one after we got our feet wet here.

Leslie Kim

After conducting a pilot usability test on the myZou website, I was surprised to see a decent amount of user experience data based on the survey results and observation data of the five user tasks from each participant. Due to the simplicity of the task procedure, I anticipated that the participants would not have a lot of feedback on any usability problems they experienced or any comments on what they liked or disliked about completing each task. Despite the majority of the participants rated the difficulty level as low and their overall experience with the site as easy, I have learned the need to make some interaction design adjustments to improve users' experience with Myzou based on our usability pilot testing results. Another lesson I learned is why we need to measure usability using the usability metrics. While the users' general feedback and comment on their overall experience with Myzou have provided us some helpful insight on the design improvements, the qualitative data collected using the usability metrics enabled us to analyze Myzou's usability with a more objective perspective. The last lesson I learned is the importance of knowing how to synthesize the lessons and findings of the usability pilot test as a team. Each of us has provided a unique perspective as researchers, and we have conducted the pilot test from users with various backgrounds. It was a learning experience to practice pitching my interpretation of the data while actively communicating the findings with other team members at the same time.

Katie Bell

During the course of conducting this test, I found myself drawing comparisons between it and our previous heuristic evaluation assignment. The tasks that we used in this assignment

would not by any means have aligned with all 10 of the usability metrics we'd previously used (finding a Help button, for example). That said, many of the same issues did surface, namely, the ambiguous terminology and the aesthetics of the site. I believe that both tests - the pilot test and the heuristic evaluation - are useful tools for identifying potential barriers to usability within a given system. While the heuristic evaluation is good for getting a more general idea of problems users might encounter across a broader range of tasks, the pilot test is better suited for seeing usability barriers as they occur naturally.

Alma Erden

Based on this usability test, I learned how important it is to develop a testing plan and outline the framework of the study. Having the information organized and documented in advance helps set up a study quickly and reduces the likelihood of forgetting something vital. I realized that the pilot test itself could be of great assistance in refining the test plan as it can reveal that certain tasks are not applicable. In addition, the pilot test gave us a good estimate of how long it will take most users to do the task. Therefore, my team can adjust the plan accordingly for the real test when deciding the maximum time allocated for each task. Since my team used a think-aloud technique for this usability study, I better understood the importance of avoiding leading the users when performing the tasks and reminding them when needed to talk aloud, even though our users were informed at the beginning of the test.

References

Birkett, A. (2022, Jan. 20). *8 ways to measure satisfaction (and improve ux)*. CXL. https://cxl.com/blog/8-ways-to-measure-ux-satisfaction/

Ericsson, K. A., & Simon, H. A. (1980). Verbal reports as data. *Psychological Review,* 87(3), 215–251. https://doi.org/10.1037/0033-295X.87.3.215

Jääskeläinen, R. (2010). Think-aloud protocol. In Y. Gambier & L. van Doorslaer (Eds.), *Handbook of Translation Studies* (Vol. 1, pp. 371–373). John Benjamins Publishing Company.

Mifsud, J. (2015). *Usability metrics-A guide to quantify the usability of any system.* UsabilityGeek. https://usabilitygeek.com/usability-metrics-a-guide-to-quantify-system-usability/

Rubin, J., & Chisnell, D. (2008). How to plan, design, and conduct effective tests. *Handbook of usability testing*, *17*(2), 348. *Handbook of Usability Testing, 2nd Edition*,

Sauro, F. M. (2011, November 11). *10 Essential Usability Metrics*. MeasuringU. https://measuringu.com/essential-metrics/

Appendix A: Think-Aloud Protocol

[Interviewer reads] Thank you for agreeing to participate in this study. With your permission, I will record our conversation (screen and audio) for team review in assessing the usability of the University of Missouri website, myZou. Participation is voluntary and you may choose to stop at any time. Do you agree with me recording this session? [If yes, start recording, including agreement.]

Before we begin, we have a few questions about you as a participant:

1. What is your age?
2. What is your gender?
3. What is your level of comfort and experience with technology? Expert: use it a lot and can troubleshoot problems with ease. Proficient: daily user and can make things work but get stuck if something doesn't work as expected. Uncomfortable: infrequent or irregular user.
4. What is your profession?
5. What platform and browser are we testing with today?

Thank you. We are going to look at the MyZou website. MyZou is the campus tool for managing campus finances, student personal data, the registration process for courses, and degree progress. Please keep in mind that it is not you or your ability to interact with the system that will be tested. The purpose of this study is to assess whether or not this system is easy to use for students and with your feedback you are helping us.

[Each researcher would either log in to their myZou account or provide the user with their (the researcher's) login information, depending on whether the test is being conducted in-person or virtually, respectively.]

We will have tasks for you to complete and we will ask you questions after each task. We ask that you talk through all of your choices and thinking while performing the tasks. Your first task is to add ISLT 7315 course to your enrollment shopping cart for the Fall 2022 semester.

[Participant thinks-aloud through the process of performing the task. Researcher intervenes with reminders to think aloud as needed.]

Thank you. Now I have a few questions for you regarding this task:

1. How difficult did you find this task to complete? (Easy, Medium, Difficult)
2. What are your likes and dislikes regarding this task?
3. Do you have any suggestions or recommendations regarding this task?

Your second task is to find your student ID number. Please talk as you walk through it and explain your thinking as you go.

[Participant thinks-aloud]

Thank you. Now I have a few questions for you regarding this task:

1. How difficult did you find this task to complete? (Easy, okay, difficult)
2. What are your likes and dislikes regarding this task?
3. Do you have any suggestions or recommendations regarding this task?

Your third task is to view your graduation application status. Please talk as you walk through it and explain your thinking as you go.

[Participant thinks-aloud.]

Thank you. Now I have a few questions for you regarding this task:

1. How difficult did you find this task to complete? (Easy, medium, difficult)
2. What are your likes and dislikes regarding this task?
3. Do you have any suggestions or recommendations regarding this task?

Your fourth task is to inform the system of your permanent address.Please talk as you walk through it and explain your thinking as you go.

[Participant thinks-aloud.]

Thank you. Now I have a few questions for you regarding this task:

1. How difficult did you find this task to complete? (Easy, okay, difficult)
2. What are your likes and dislikes regarding this task?
3. Do you have any suggestions or recommendations regarding this task?

Your fifth task is to check the grades for enrolled courses in the Fall 2021 semester. Please talk as you walk through it and explain your thinking as you go.

[Participant thinks-aloud.]

Thank you. Now I have a few questions for you regarding this task:

1. How difficult did you find this task to complete? (Easy, okay, difficult)
2. What are your likes and dislikes regarding this task?
3. Do you have any suggestions or recommendations regarding this task?

Lastly, we ask that you fill out a 10-item survey (SUS) to indicate your overall experience with myZou.

Appendix B

Summary of Users and Think-aloud

Participant 1 in Ames, IA		
User Profile	Age/ Gender	40, male
	Internet/Technology Experience	Expert
	Profession	Math Teacher

Test Context	Usability Test Method	Think aloud, SUS
	Date of Test	03/06/2022
	Platform/ Browser	PC, Windows/ Google Chrome

	Task 1	Task 2	Task 3	Task 4	Task 5
Task Description	Add ISLT 7315 to your enrollment shopping cart for the Fall 2022 semester.	Find your student ID number.	View your graduation application status.	Inform the system of your permanent address.	Check the grades for enrolled courses in the Fall 2021 semester.
Task Success	Success	Success	Success	Success	Success
Time spent to complete the task	2 minutes	5 seconds	7 seconds	10 seconds	20 seconds
Difficulty rating in completing the task	2	1	1	1	1

Errors or problems identified by the user	The `Enter **class** number`field in the shopping cart screen does not correspond to the **course** number. (Figure 2). It is another number that the user didn't know in advance. Was confused because when entering the course number nothing happened and then clicked on the search button. After adding the class to the shopping cart (See Figure 3) the schedule appears repeated 3 times the same day and time. The field and the label for the course nr	There were no errors or problems identified by the user.	There were no errors or problems identified by the user.	There were no errors or problems identified by the user.	When clicking on Academic records on the main page the list of taken classes appears together with grades. (see Figure 4).It is not necessary to search again unders the `grades` subcategory under academic records.

	are very close to each other which is not aesthetic.				
Overall user comments (likes and dislikes)	Disliked that too much information is presented at once when trying to add a class in shopping carts Didn't like that the course number number couldn`t be used in the first field that appeared in the interface of the shopping cart.	Liked that the interface was very intuitive when performing the task.	Liked that the terminology was clear.	Liked the icon based navigation. The feedback when hovering over the icons is very helpful when proceeding for the task.	Didn't find it necessary to have grades separately for a certain semester since they are visible for all the finished semesters on the first screen of academic records.

Figure 2

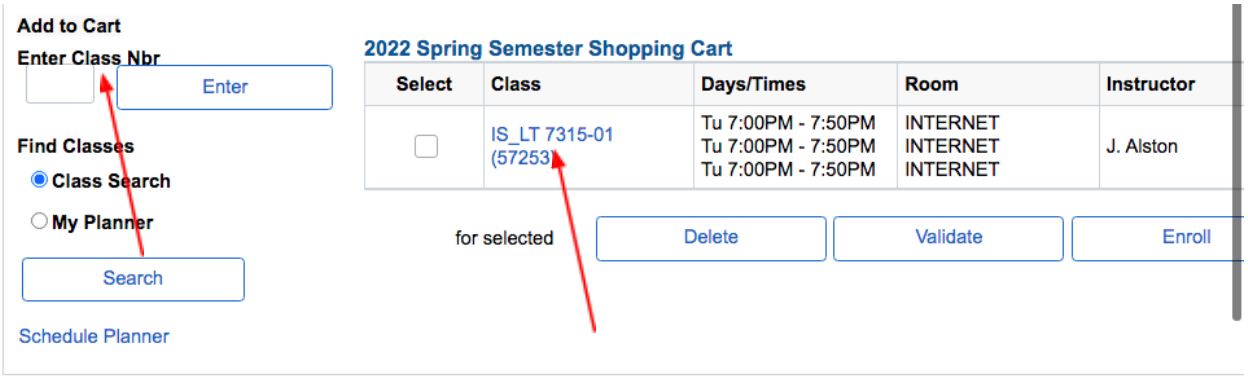


Figure 3

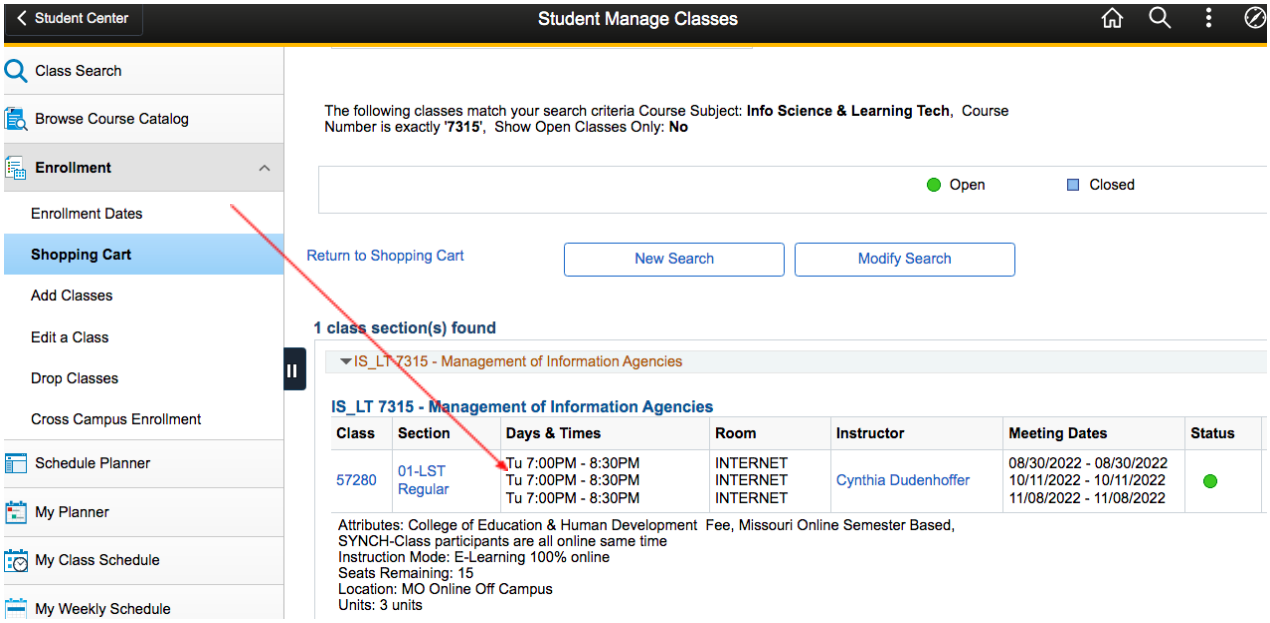
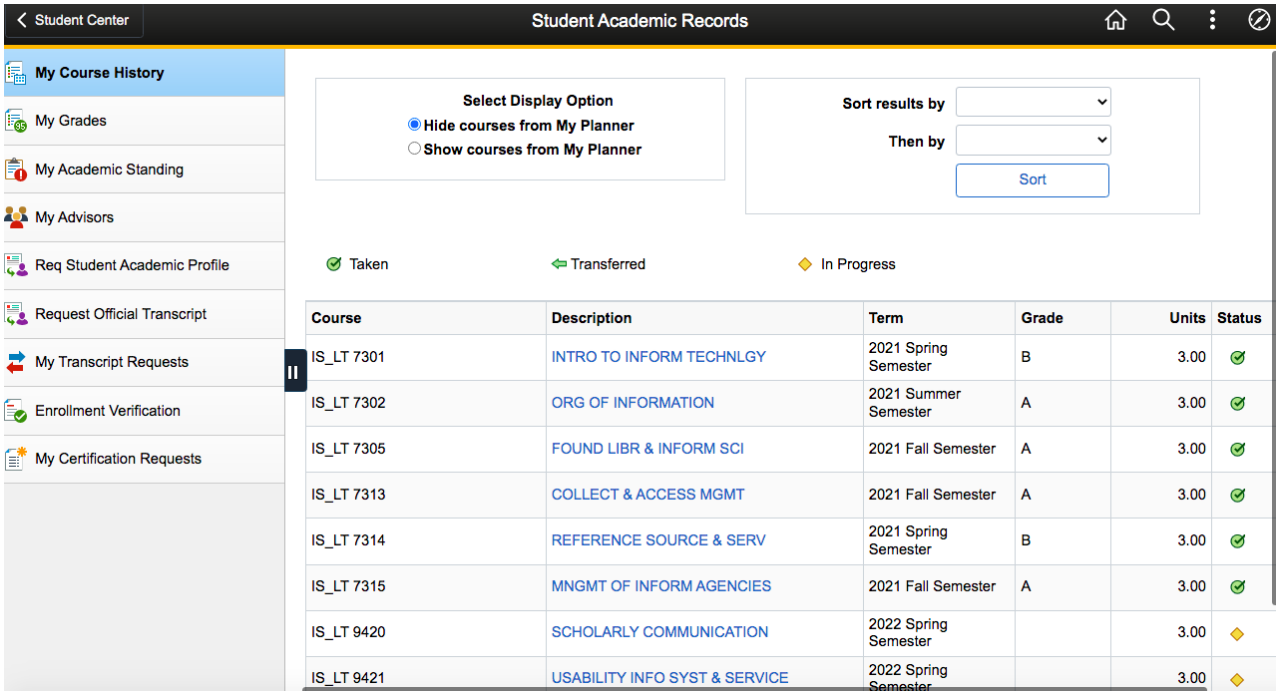


Figure 4

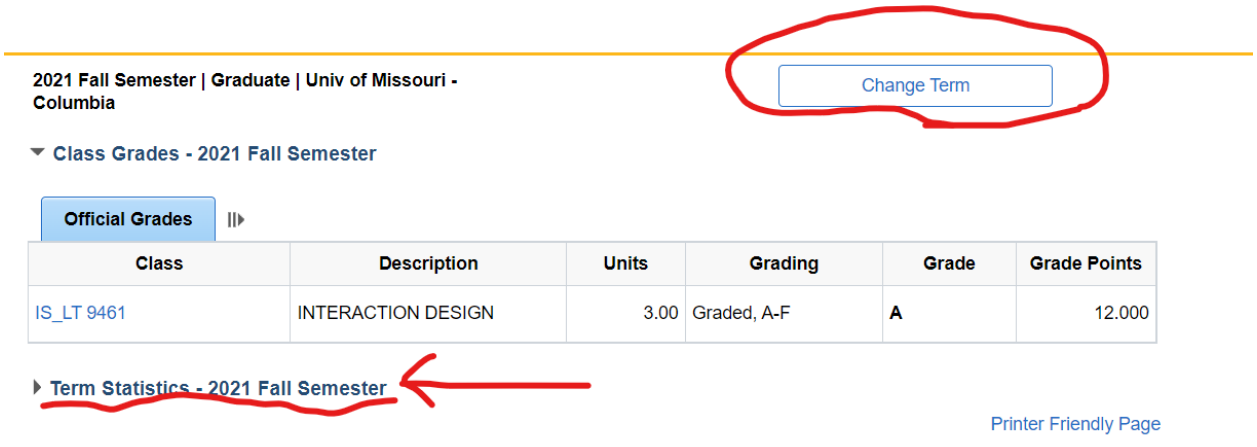


Participant 2 in Fairfax, VA		
User Profile	Age/ Gender	31, male
	Internet/Technology Experience	Expert
	Profession	College graduate
Test Context	Usability Test Method	Think aloud, SUS
	Date of Test	3/6/2022
	Platform/ Browser	PC, Windows/ Google Chrome

	Task 1	Task 2	Task 3	Task 4	Task5
Task Description	Add ISLT 7315 to your enrollment shopping cart for the Fall 2022 semester.	Find your student ID number.	View your graduation application status.	Inform the system of your permanent address.	Check the grades for enrolled courses in the Fall 2021 semester.
Task success	Success	Success	Success	Success	Success
Time spent to complete the task(s)	2 minutes	1 minute	1 minute	1 minute	1 minute

Difficulty rating in completing task	1	1	1	1	1
Errors or problems identified by a user	It took a while to find the shopping cart. There is no shopping cart icon to easily navigate.	none	none	none	none
Overall user comments (likes and dislikes)	I did not like how it was not easy to find the shopping cart.	none	Too easy	Too easy	Finding the change term button was not immediately identifiable. Maybe make all terms expand/collapse? (Figure 5)

Figure 5



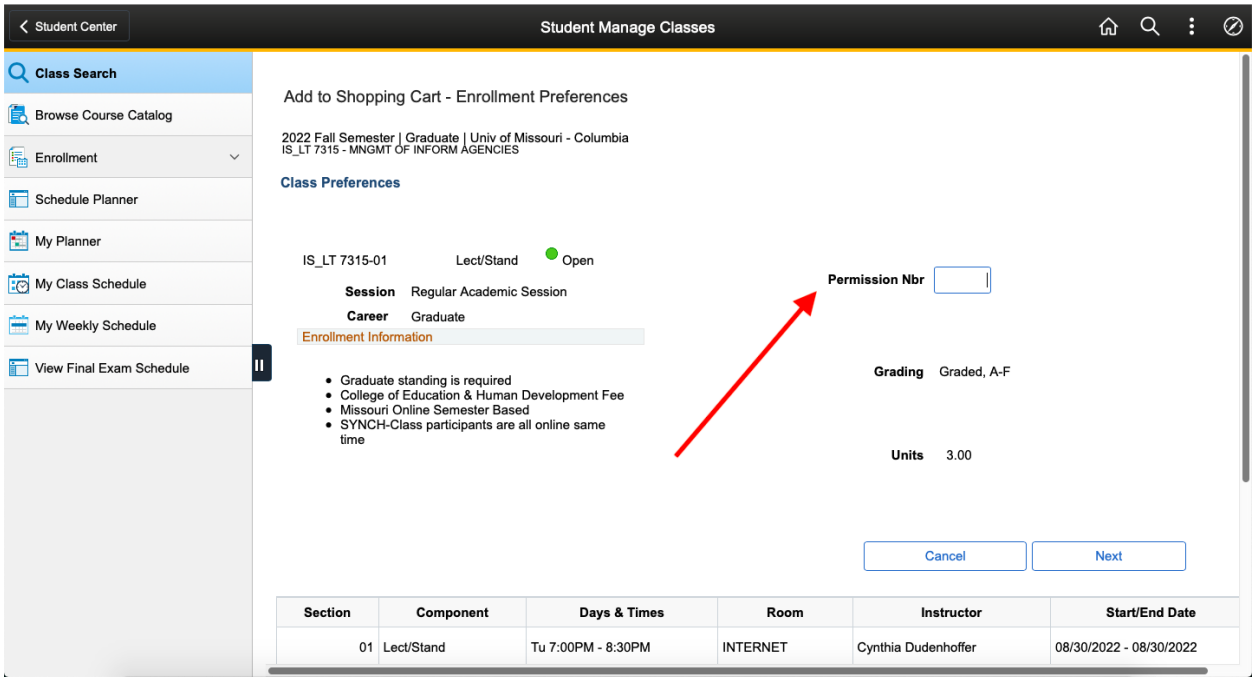
Participant 3 in St. Charles, MO

User Profile	Age/ Gender	63, Female
	Internet/Technology Experience	Proficient
	Profession	Homemaker
Test Context	Usability Test Method	Think aloud, SUS
	Date of Test	March 6, 2022
	Platform/ Browser	Mac, iOs/Safari

	Task 1	Task 2	Task 3	Task 4	Task5
Task Description	Add ISLT 7315 to your enrollment shopping cart for the Fall 2022 semester.	Find your student ID number.	View your graduation application status.	Inform the system of your permanent address.	Check the grades for enrolled courses in the Fall 2021 semester.
Task success	Success	Success	Success	Success	Success
Time spent to complete the task(s)	6 minutes	27 seconds	1 minute 36 seconds	52 seconds	1 minute 13 seconds
Difficulty rating in completing task	1	1	1	1	1

Errors or problems identified by a user	The "Enrollment Preference" screen needs lines or another way to break up the screen. This would help give a better idea of how to approach it. Also, there was no explanation for some of the more ambiguous terms, such as "Permission Nbr." (Figure 6)	None	None	None	Initially confused by the fact that the default list order was by course number, rather than by semester. Missed seeing the sorting options.
Overall user comments (likes and dislikes)	Did ok overall; too much white space, not enough lines.	Felt easy enough; seemed like everything was in one place & easy to find via the links on the homepage.	Pretty easy; seemed like it worked in a straightforward manner.	It seemed pretty easy; if no addresses were in the system, or changes needed to be made, it is easily apparent where to go and what to do.	Not too hard; would prefer default order by semester, instead of course number.

Figure 6



Participant 4 in New York, NY		
User Profile	Age/ Gender	22, male
	Internet/Technology Experience	Expert
	Profession	College student (Senior)
Test Context	Usability Test Method	Think aloud, SUS
	Date of Test	02/27/2022
	Platform/ Browser	PC, Google Chrome

	Task 1	Task 2	Task 3	Task 4	Task 5
Task Description	Add ISLT 7315 to your enrollment shopping cart	Find your student ID number.	View your graduation application status.	Inform the system of your permanent	Check the grades for enrolled courses in the

	for the Fall 2022 semester.			address.	Fall 2021 semester.
Task Success	Success	Success	Success	Success	Success
Time spent to complete the task	1 minute 37 seconds	1 minute	10 seconds	12 seconds	27 seconds
Difficulty rating in completing the task	1	2	1	1	1
Errors or problems identified by the user	The user did not immediately grasp the meaning of the button labeled “Shopping Cart.”	The user clicked on “Academic Records,” and then “Course History” and “Grades” before returning to the home page and selecting “Personal Information.”	There were no errors or problems identified by the user.	There were no errors or problems identified by the user.	There were no errors or problems identified by the user.
Overall User Comments (Likes and Dislikes)	Occasional terms like “Shopping Cart” are unintuitive and confusing.	The switch from the horizontal tile menu (home page) to any of the vertically oriented pages therein is confusing (see Figures 7 and 8).	None	None	The system is overall very simple and easy to use as long as you understand the nature of the task.

Figure 7

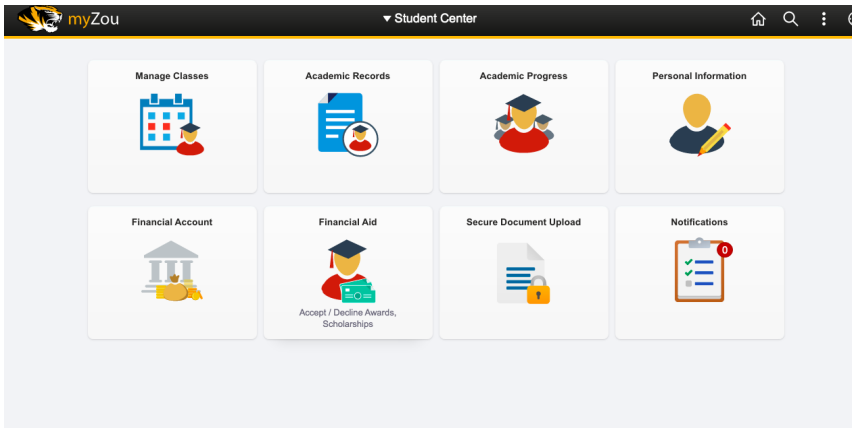
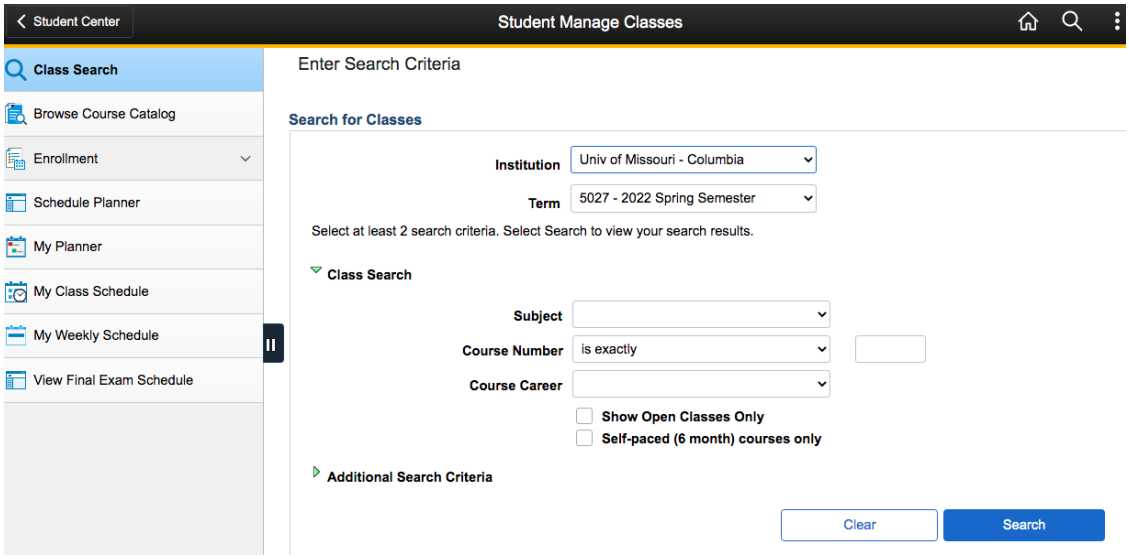


Figure 8



Appendix C

System Usability Scale

Available in Qualtrics:

https://qfreeaccountssjc1.az1.qualtrics.com/responses/#/surveys/SV_b8Ip1pfFC1n4VcG

SUS	Strongly disagree		Neutral		Strongly agree
1. I think that I would like to use this system frequently	1	2	3	4	5
2. I was not overwhelmed by the numerous options and complexity of the tool.	1	2	3	4	5
3. I thought the system was easy to use.	1	2	3	4	5
4. I think that I would need the support of a technical person in order to use this system.	1	2	3	4	5
5. I found the various functions in this system were well integrated.	1	2	3	4	5
6. I thought there was too much inconsistency in the system.	1	2	3	4	5
7. I would imagine that most people would learn to use this system very quickly.	1	2	3	4	5
8. I found the system very cumbersome to use.	1	2	3	4	5
9. I felt very confident using the system.	1	2	3	4	5
10. I needed to learn a lot of things before I could get going with the system.	1	2	3	4	5

SUS Data Summary

Respondent 1

SUS	Original Score	Converted Score
1. I think that I would like to use this system frequently.	4	3
2. I found the system unnecessarily complex.	1	4
3. I thought the system was easy to use.	5	4
4. I think that I would need the support of a technical person in order to use this system.	1	4
5. I found the various functions in this system were well integrated.	4	3
6. I thought there was too much inconsistency in the system.	1	4
7. I would imagine that most people would learn to use this system very quickly.	4	3
8. I found the system very cumbersome to use.	1	4
9. I felt very confident using the system.	5	4
10. I needed to learn a lot of things before I	2	3

could get going with the system		

User 1: 36x2.5=90

Respondent 2

SUS	Original Score	Converted Score
1. I think that I would like to use this system frequently.	5	4
2. I found the system unnecessarily complex.	1	4
3. I thought the system was easy to use.	5	4
4. I think that I would need the support of a technical person in order to use this system.	1	4
5. I found the various functions in this system were well integrated.	5	4
6. I thought there was too much inconsistency in the system.	1	4
7. I would imagine that most people would learn to use this system very quickly.	5	4
8. I found the system very cumbersome to use.	1	4
9. I felt very confident using the system.	5	4

10. I needed to learn a lot of things before I could get going with the system	1	4

User Score: 40x2.5=100

Respondent 3

SUS	Original Score	Converted Score
1. I think that I would like to use this system frequently.	5	4
2. I found the system unnecessarily complex.	1	4
3. I thought the system was easy to use.	5	4
4. I think that I would need the support of a technical person in order to use this system.	1	4
5. I found the various functions in this system were well integrated.	4	3
6. I thought there was too much inconsistency in the system.	4	1
7. I would imagine that most people would learn to use this system very quickly.	5	4
8. I found the system very cumbersome to use.	3	2

9. I felt very confident using the system.	4	3
10. I needed to learn a lot of things before I could get going with the system	1	4

User Score: 33x2.5=82.5

Respondent 4

SUS	Original Score	Converted Score
1. I think that I would like to use this system frequently.	1	0
2. I found the system unnecessarily complex.	2	3
3. I thought the system was easy to use.	5	4
4. I think that I would need the support of a technical person in order to use this system.	1	4
5. I found the various functions in this system were well integrated.	3	2
6. I thought there was too much inconsistency in the system.	4	1
7. I would imagine that most people would learn to use this system very quickly.	5	4

8. I found the system very cumbersome to use.	1	4
9. I felt very confident using the system.	5	4
10. I needed to learn a lot of things before I could get going with the system	1	4

User Score: 30x2.5=75