

Supreme Mosaic – Group#18

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ABSTRACT

It is the final report for the design project. A proposal, software survey, personas and usability test of software have been presented. A brief description has been given as well as a high-level critique of major usability flaws that appear in it. Additionally, alternative solutions to recurring these problems and task analysis are presented.

Author Keywords

Information, Human factors, Management, Reliability, Interface design, Usability flaws, Software Survey, Personas, Usability Test, Discussion

ACM Classification Keywords

H.5.2[Information Interfaces and Presentation]: User Interfaces, H.A.1[General Literature]: Introductory and survey

INTRODUCTION

Mosaic is PeopleSoft-based administration information system. Currently, it has many functions which help students and faculties to manager their import affairs of the school, such as student course enrollment, financial management and letter requirement. It brings students and faculty convenience.

However, it takes users time to discover and get familiar with it. Nevertheless, a good UI design should ensure minimum time for users to learn. There are two major issues that appear in Mosaic. The two issues are: Course Enrollment and Academic sections. We have briefly discussed the detail of these issues and provide the alternative functionality which should be added.

We have also listed four different Student Web Service systems from different universities. These schools are ISEP, University of Toronto, University of Windsor and Centennial College. Each of the systems have been briefly described, followed by a high-level critique, and the major usability flaws that appear in systems have also been addressed.

To help guide the design of our software UI, we created three personas, they have different needs for management system. Moreover, the test was created to help us measure the usability. The goal of this project is to discover the both

advantage and disadvantage of system and improve its usability.

MOSAIC ISSUE – COURSE ENROLLMENT

The course enrollment system on Mosaic is user unfriendly. Its biggest issue is that it does not support opening a link in a new tab or window, which makes it difficult for students to compare time and locations of the courses. It may mislead students to enroll in a conflict course schedule. The search function is another issue with the Mosaic system. Mosaic only allows you to search a specific course by its course number, which is useless to students because they still have to look through all courses in a subject. When the user selects one subject from the search for class dialog, some subjects may offer many courses, then the user will see a new window with “Your search will return over 50 classes, would you like to continue?” and it requires the user to click on “OK” to continue, which does not make any sense because the user have to continue anyway to find their required course.

MOSAIC ISSUE – ACADEMIC

In the “Academics” section of Student Center, some functions aren’t especially useful. For example, there are links (“Search”, “Plan”, “Enroll” and “My Academic”) which are used to redirect to the pages in the options in the section bar menu. Also, some options in the selection bar menu are used rarely which makes the selection bar redundant. If user wants to use the option selection box menu, user is required to click the box dialog, click the desired subdirectory, and click the arrow beside box dialog. The total movements are three clicks, whereas only two clicks are required using the link (Enroll -> Add). Lastly, the selection bar menu tends to be slower for the experienced user excluding environment factors such as latency.

FUNCTIONALITY

The functionality will be added to our product is to improve user experience, as mentioned in course enrollment. When it comes to enroll in a class, the system asks for the class number instead of the course code, which is a system-oriented term. When adding the functionality, our system will be only using user-oriented terms on the user’s side and to implement it, a language interpreter will be implemented to convert between them.

Another functionality that will be added to the system will decrease the number of inputs required by the user to decrease latency between the user and the system. This would afterward result in improvement in human performance. To achieve it, our system will eliminate the unnecessary request of input, as mentioned in the previous example in the section Course Enrollment. Also, the menu selection bar in “Student Center” page will be removed since all the subdirectories in the menu selector can be alternated with the static menu link with fewer interactions. Additionally, the search dialog will be added the system, as the information that user wants to acquire can be hidden at the bottom of the hierarchy tree.

Our system will have more graphical user interfaces implemented to it. For example, on the “Student Center” page or Mosaic, weekly calendar view of the schedule will replace the list view of the schedule, because graphical presentation of information is much suitable than how it is presented. Moreover, for the submenus, icons will be added above it to improve learnability and speed of operation of the user. Finally, expected time table for the targeted semester will be displayed on screen when the user tries to search/add classes. By adding such feature, user won't have to memorize their time table in their short-term memory, which will have 50% correct memorization when total number of classes (including lectures, tutorials and labs) comes to seven.

SOFTWARE SURVEYS

For each universities' system, a simple description was given, and the usability flaws and task analysis were discussed.

University of Toronto

Acorn is the Student Web Service system of University of Toronto. It has three main functions - Academics, Finances and Life. Students can select between a variety functions to suit their needs.

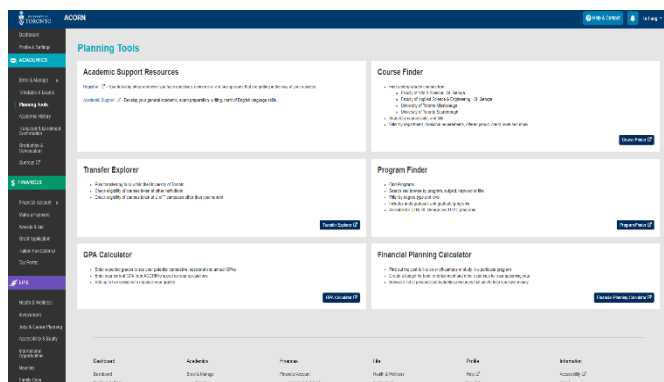


Figure 1. Main page of Student Web Service of University of Toronto

Acorn uses different colors to divide sections, so that it gives significant hint for users to easily find a specific function.

However, when students select a function from three main functions such as planning tool Figure 1, it displays sub-categories. After clicking the sub-categories, it may lead users to relevant website or categories again. Due to too many subdirectories, users have to explore in new categories and find the significant words that they need. Then they may repeatedly click it in many subdirectories again and again, so that they can be brought to the page that they want. It has detrimental effect on the discoverability of the system.

ISEP - Institut Supérieur d'Electronique de Paris

Figure 2 is the Student Web Service System of Institut Supérieur d'Electronique de Paris called Moodle. Like the most university's system, Moodle helps student make connection between university and daily life. The system supports several languages to help people who are not familiar with French to better understand the system.



Figure 2. Main page of Institut Supérieur d'Electronique de Paris

The usability of My Course section seems not user friendly. If students want to get material provided, by registered course, there are three ways they can do it. They can scroll down the homepage to find My course section, click Courses in the top menu or find it in the left side menu. If students are not familiar with system, they may scroll down all the way to the bottom of the page until they find the Course Section. Under the Course Section, they also have to find category of courses and click it. Finally, they can get material of the courses. The page contains duplicate functions which may confuse users and many sub-categories which mis- leading users.

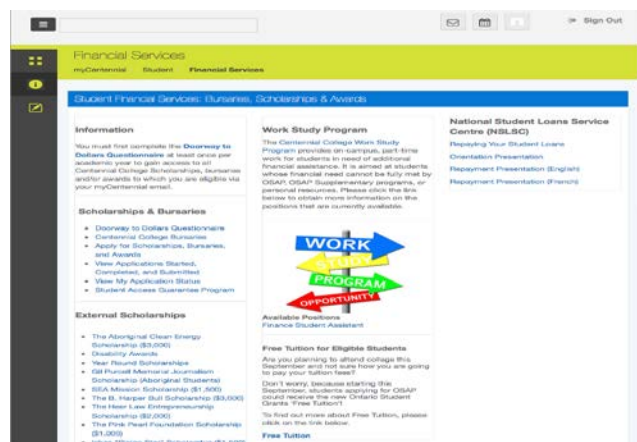
University of Windsor

myUWindsor is the course website management of University of Windsor. It provides students' academic, registrational and financial information. The page displays the course announcements, campus events, daily news and important links. The overload of information results in a poor discoverability of the website,

Planned Courses:	Registered Courses:	Wait List:		
	Mon	Tue	Wed	Fri
8am		8:30 - 9:50 06-88-313-01		8:30 - 9:50 06-88-313-01
9am				8:30 - 9:50 03-65-72 06-80 - 9 03-65-72 03-65-
10am	10:00 - 11:20 06-88-316-01	10:00 - 11:20 03-41-110-03	10:00 - 11:20 06-88-316-01	10:00 - 11:20 03-41-110-03
11am	11:30 - 11:30 - 03-65-72 03-65- 250-01		11:30 - 11:30 - 03-65-72 03-65- 250-01	
12pm				
1pm	1:00 - 2:20 06-88-330-01		1:00 - 2:20 06-88-330-01	1:30 - 2:20 06-88-316-01
2pm			2:30 - 2:30 2:30 2:30 06-06-06-06-06-06- 88-88-88-88-88-88- 338-338-338-338-338- 51-51-51-51-51-51	2:30 - 2:30 2:30 06-88-06-06- 313-588-88- 313- 52-52
3pm				
4pm				
5pm				
6pm				
7pm				
8pm				
9pm				
10pm				

Students can find their timetable under registration menu. The timetable page displays all courses the student registered in the selected term all the course information on the top, below it is the weekly schedule in Figure 3. However, the weekly schedule is confusing as it displays only the time and the numerical course ID, and it does not provide options of displaying the location, instructor, class title and related information.

Centennial college has the similar system like McMaster University Mosaic which is called MyCentennial. Alike Mosaic, MyCentennial provides a gateway between students and services provided by Centennial College.



For students to apply for bursary, students log in and click Financial Services from the submenu under Student, then select Apply for Scholarships, Bursaries and Awards. At last, the student is asked to fill in fields, and submit. The issue

For a student to apply to view an unofficial transcript, they need to log in to a system, click the student tab from the menu bar, select Student Records from the sub-menu, and finally click “View Unofficial Transcript” from the contents. The student is then asked to fill Transcript Level and Transcript Type fields, and then to hit the submit button to view a transcript. The hierarchical task seems flawless and logical, but the system was designed with a lack of understanding of the users. Most students request unofficial transcript because most companies request one when students are applying for their co-op or jobs, but the system only offers viewing the transcript rather than downloading directly, which results decreased usability.

The personas were used to help guide the design of our software UI.

- 22 years old, Male
- Markham, Canada
- Student at McMaster University in Computer Science

- Programming skills
- Python, Java, C/C++
- Smart phone and laptop user

With the development of technology, he has always been curious about new technologies. Consequently, he is interested in school management system – Mosaic. In first weeks, he tries to get familiar with them and successfully to exchange the courses.

Person 2: Lisa

- Burlington, Canada
- 40 years old, Female

- Professor at McMaster University in Health Science

Frustrations:

- Feel Software is difficulty to use in daily life
- Spend too much time on pursuing advanced technology

Narrative: Lisa is 40 years old and she is mother of two girls. She teaches several courses in McMaster University.

As grow older, her memory is failing. As a professor, she has to spend time to memorize the teaching courses schedules. However, she is struggle with checking weekly schedule. It is hard for her to find it in a complex management system.

Person 3: Aida Misa

- Tokyo, Japan
- 18 years old, Female
- Student at McMaster University in Business

Frustrations:

- Spends too much time understanding how to use the application
- Feels the website is not easy to use on mobile device

Narrative: Aida is 18 years old, single and grows up in Japan. She recently moved to Hamilton with her family and studies in McMaster University.

She has a heavy workload and she does not have much free time. Therefore, she always uses her mobile phone to manage her enrolled courses. She is not familiar with the system, she always ends up on the wrong page due to misleading.

USABILITY TEST

The usability test is designed for measuring how long the user can get the goal of particular task with school management system. Moreover, the user would grade it by comparing with old school management system.

Test Case 1: Find the exam schedule

Time the user while they perform the task. When the user performs the task, time them to see how long it takes to find the page that displays exam schedule. If the user enters an incorrect page due to misleading, it will count for an error.

Test Case 2: Find the weekly schedule

Time the user while they perform the task. When the user performs the task, time them to see how long it takes to find the page that displays weekly schedule. If the user enters a different page due to misleading, it will count for an error.

Test Case 3: Find the course enrollment page

Time the user while they perform the task. When the user performs the task, time them to see how long it takes to find

the page that displays course enrollment. If the user enters a different page due to misleading, it will count for an error.

Test Case 4: Course Searching

Time the user while they perform the task. When the user performs the task, time them to see how long it takes to find the course that they want.

RESULTS

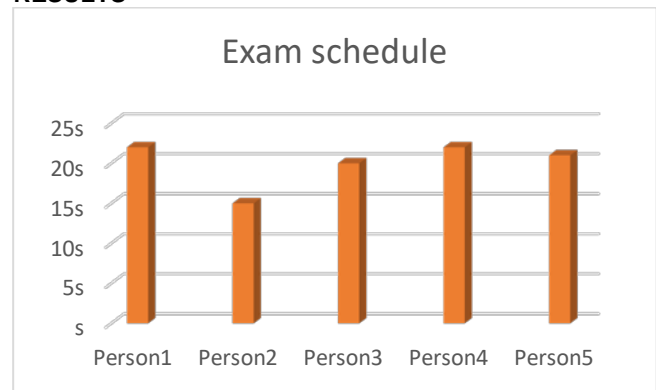


Figure 5.Find Exam Schedule

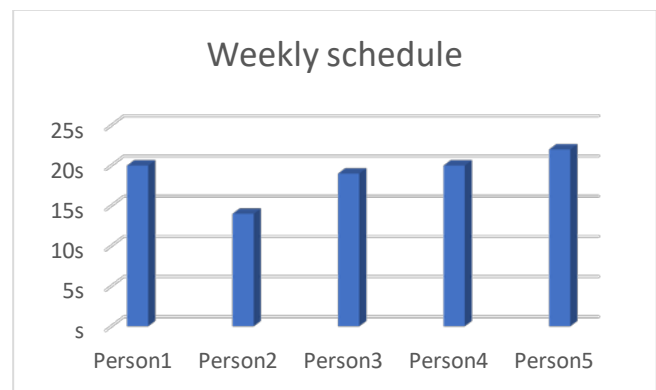


Figure 6.Find Weekly Schedule

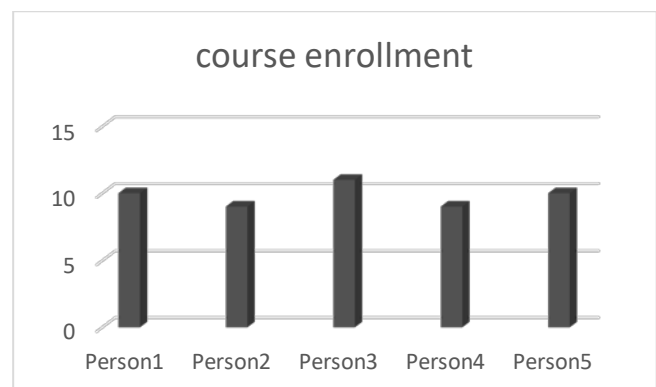


Figure 7.Find Course Enrollment

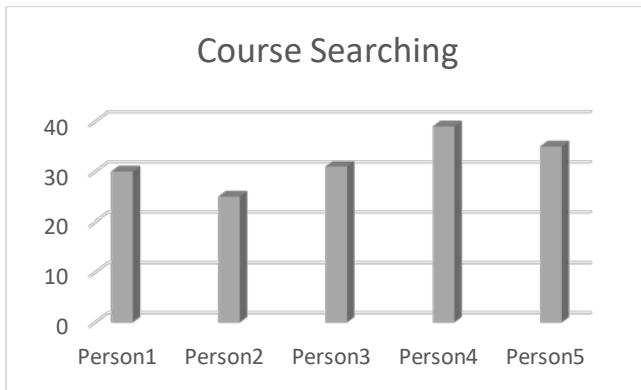


Figure 8.Course Searching

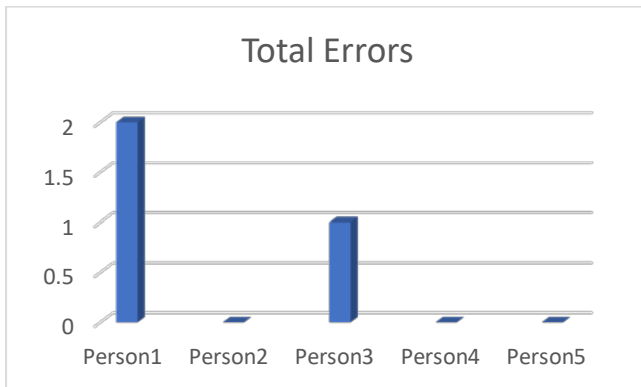


Figure 9.Total Errors

The average time for finding schedules was below 22 seconds, which was acceptable. It took between 8 to 11 seconds for participants to find the course enrolment page, this was distinctly shorter than the time it took for an average person to find the course enrolment page on the current Mosaic system. Course searching was what participants spent the most time on, but considering they had to input the search criteria, as well as differences in typing speed, the large spread of the result, which was between 20 to 40 seconds, was expected. In total, there were only three errors made by the five participants, and of these participants, only two of them made no mistakes and finished all tasks quickly.

From the charts, we could see that people who spent less time on one task generally spent less time on other tasks too. The proficiency of participants of using computers and their familiarity of the system results in the difference in the time of completing a task. Despite these differences, the average time it took for participants to finish a task is satisfying.

DISCUSSION

Our goal was to improve the usability of the school's administrative system. For the usability test, we invited five students to participate in testing our new User Interface for Mosaic.

According to the previous summary, we found Mosaic's flaws regarding course enrollment and schedule checking. As the result showed above, we could intuitively find that each participant could easily complete the specific task that we gave in a short period. In most cases, there was a trade off between speed and accuracy. However, none of the participants have had any experience using the new User Interface prior to these experiments, meaning that the new system has to be learned. At the very beginning, students were slightly slower when using this system, but after a short amount of time, it can be seen that there was a major increase in both speed and accuracy.

On the other hand, all of the participants have had prior experience with current student administrative system. Due to this, it can be assumed that each student would have a higher speed and accuracy when using Mosaic as compared to the first time using our new system. It is also notable that the students have already used this old system for an extended period of time, and it is unlikely for them to find major improvements in their speed after this period. Even though it seems that Mosaic is more efficient than our improvement, this result is solely due to the lack of experience in the new system, and at the same experience level, it is predicted that the new system will be far superior in efficiency and user friendliness than the currently used one.

Although the rate of error was relatively low, a new area of focus should be on the significant words appearing on each page. One way to increase the speed of user recognition and to reduce the time taken to find the required results would be to increase the simplicity of the keywords so students can process the information more efficiently. A second improvement that could be made could be to suggest hints on the page, most likely when the user hovers over a selection for an extended period of time, thus letting the user know more detail about said selection so that they may make their decision more rapidly and achieve the result that they are looking for.

Replacing a current system like Mosaic with something similar to what we have created would have positive and negative effects. At first, the students who are already enrolled and used to the current system will have to learn the new system, resulting in a probable decrease in efficiency in the beginning. However, after a learning period, it is likely that the students will become more efficient when using this system. Additionally, new students, and any other new users of the system would instantly see the improvement because they have no prior experience in the older system. Overall, it would have a net positive effect in the near future.

CONCLUSION

To summarize, this report has indicated two usability issues of the current student administration system of McMaster University. After doing some surveys of four similar systems from different universities, and using the positive aspects from each of these systems, we developed our own User Interface to hopefully provide the most efficient and user-friendly experience. Afterward four personas were created in order to help us redesign this system. In order to show our design more intuitively, we created a small program using HTML, CSS and Javascript.

To evaluate our design, we did a usability test with five participants. We analyzed the results of these participants

using our system without any prior experience in it. In our results, all the participants could quickly get familiar with redesigned UI. This solidifies the hypothesis that with the same level of experience and learning, that users will be able to navigate our UI better than the currently used one. Nevertheless, there were still some weaknesses in our design. Progress in this UI can be made by improving keywords, and also adding suggestive help functions when the user is confused. This type of UI will overall provide a more efficient and simplistic manner for students to obtain information about their academic career and surely is a positive step towards making an exceptional UI for McMaster.