Adapting to user needs: The mixed methods assessment approach that helped shape the new Group Study Room Booking system at the University of Ottawa Library

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Introduction

The University of Ottawa is a bilingual (English - French) public research institution in Canada. This case study presents the benefits of iterative and user-centered design for the new Group Study Room Booking system at the University of Ottawa Library. The group study rooms are one of the most used and popular services among students and the online reservation system is visited more than 1,200 times daily. However, the previous system had been in production for six years without any major version upgrades or changes in its backend and frontend. In 2019, the project team was formed to improve the online reservation system.

Literature Review

- When assessing library services, understanding the library to be a "complete system with many working, interactive parts" (Marquez et al., 2015) helps gain a holistic view of the user experience.
- Room booking system requirements should answer library room booking policy needs and allow for the protection of student privacy (Atkinson & Lee, 2018).
- Identifying target audience and current system use is key to developing meaningful usability testing tasks (Guay et al., 2017; Rosala, 2020).
- Iterative testing is crucial to achieving user-centered design (Nielsen 2013; Chao, 2019).
- Qualitative, task-based usability testing during the execution phase of the product development process helps identify and address challenges users encounter with regards to usability quality components (e.g. learnability, efficiency, memorability, errors and satisfaction) (Nielsen, 2012).

Atkinson, S., & Lee, K. (2018). Design and Implementation of a Study Room Reservation System: Lessons from a Pilot Program Using Google Calendar. *College & Research Libraries*, *79*(7), 916.

Chao, Z. (2019). Rethinking User Experience Studies in Libraries: The Story of UX Café. *Weave: Journal of Library User Experience*, *2*(2).

Guay, S., Rudin, L., & Reynolds, S. (2019). Testing, testing: a usability case study at University of Toronto Scarborough Library. *Library Management*.

Marquez, J. J., Downey, A., & Clement, R. (2015). Walking a mile in the user's shoes: Customer journey mapping as a method to understanding the user experience. *Internet Reference Services Quarterly*, *20*(3-4), 135-150.

Nielsen, J. (2012). *Usability 101: Introduction to Usability*. Nielsen Norman Group. https://www.nngroup.com/articles/usability-101-introduction-to-usability/

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Assessment Methods

1. Web analytics tools
Purpose: To understand what keywords brought users to the system and how they interacted with it.

- Period: 2018.01.01 - 2019.05.01
- Tools: Google Analytics and Google Search Console tool

2. Survey
Purpose: To gather users' needs and evaluate the previous system. Recruitment was done through an announcement in the system and by email to participants who had used it in the previous week.

- Period: 2019.03.10 to 2019.04.02
- Respondents: 279 (English) | 105 (French), from first-year to PhD students
- Tool: Survey Monkey

3. Usability testing
Purpose: To test and verify a design of the new interface (desktop and mobile) as well as new functionalities. Recruitment was done by identifying respondents in the previous survey who indicated their interest in UX testing. A $10 (CAD) gift card was awarded.

- Period: July – Aug (Round 1) | Oct – Nov (Round 2) | Dec (Round 3) in 2019
- Participants: 11 (EN), 1 student with special needs, 1 online participant | 7 (FR)
- Tools: Screencast-O-Matic to record | Zoom for online participant | Android Emulator for mobile testing
- Method: Think-aloud protocol
- Format: Tasks-based UX testing for desktop and mobile-view and after-survey
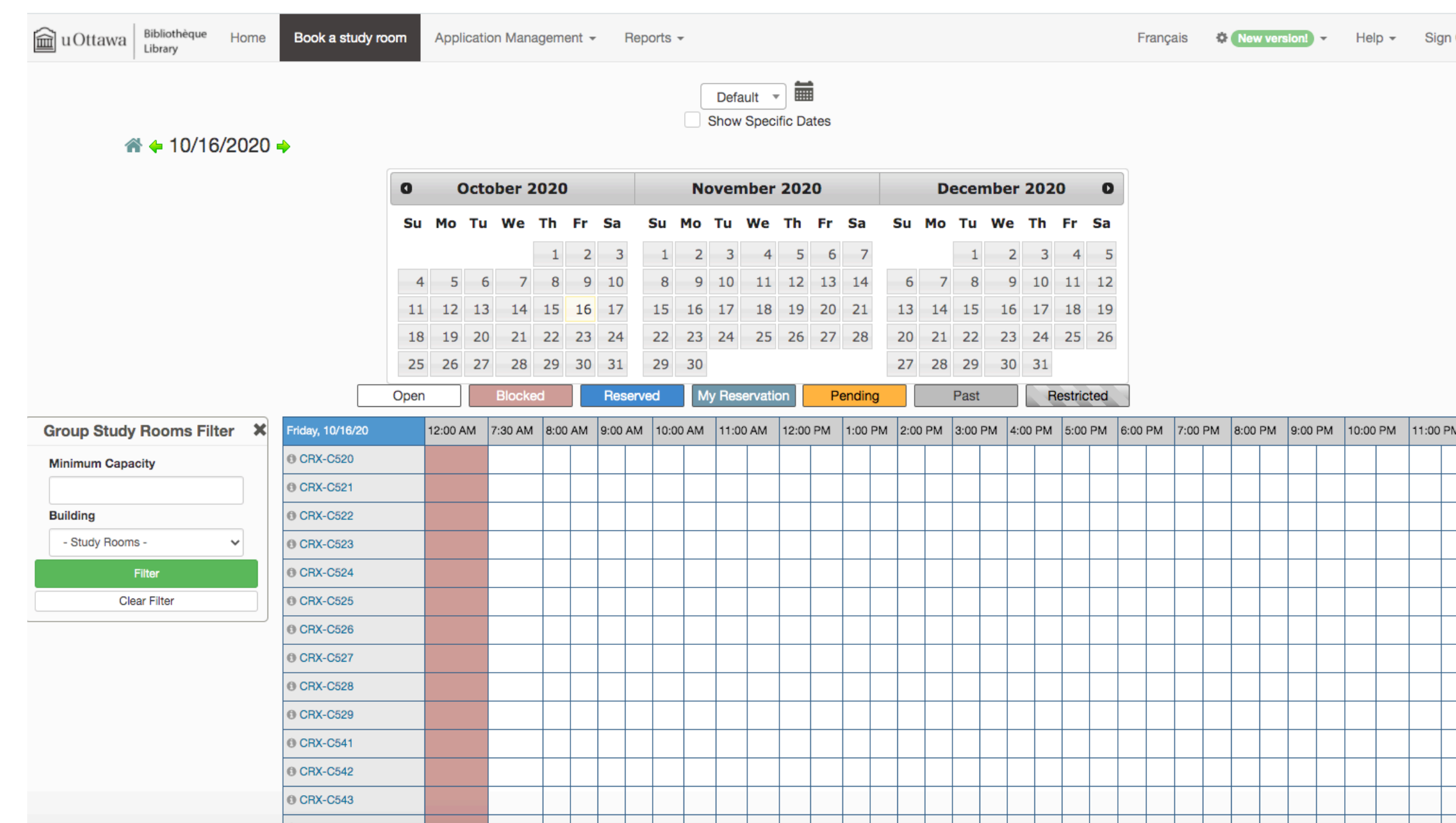
New Interface

Figure 1. New interface (calendar view) of the Group Room Booking system. Previously, students had to click a location first in order to see available rooms. Now, students can see all rooms available with options to filter by maximum capacity and building location.

Implementation

Table 1. List of principal changes made to the tool following each round of survey or usability testing (total number of participants indicated in parentheses).

Round	Changes made
Survey (384)	Migrated to a Single-Sign-On (SSO) option for access
	Implemented a calendar view and a list of available rooms
	Added facets to filter by maximum room capacity and location
UX testing 1 (7)	Made room bookings anonymized to other students for privacy
	Added an 'upcoming reservation' section
	Enabled editing of existing reservations
	Simplified the time in calendar view (hours and minutes only)
UX testing 2 (9)	Included an information icon for additional details on the room (e.g. snapshot, capacity, whiteboard)
	Removed the list of available rooms from the homepage, focusing on the calendar view only
	Froze time at the top row scrolling in calendar view
IUX testing 3 (2)	Added colour-coding for reserved rooms and open slots in calendar view
	Sending automated reminder email day before reservation

Conclusion

- The new Group Study Room Booking system was successfully launched on January 3, 2020.
- From its launch to March 13, 2020, there were 16% more students and 17% more bookings compared to the same period in the previous system.
- UX testing results indicate that students found the new system more user-friendly and easier to access.