

Mount Royal University | INFO 3600

Usability Report

Team 3 | Calgary Public Library

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1: Introduction

"The Calgary Public Library (CPL) offers a wide range of online and digital services to anyone with a library card. Onboarding new users to the service, setting them up with a library card, and communicating the steps required to access external services, such as Libby or Overdrive, has been identified as a point of concern. Additionally, the library has identified a definitive need to engage with Calgarians more effectively, informing users of everything the library has to offer.

A team of Information Design students from the communications department at Mount Royal University conducted a series of one-on-one moderated usability tests to assess the onboarding system, and the usability of CPL's site in general. The moderator used a macro enabled spreadsheet to record their observations and track the time their participant spent on each task. Additionally, the worksheet includes the System Usability Scale (SUS) survey to analyze the group of participant's overall satisfaction with the service after completing the test.

2: Executive Summary

The sessions were conducted by the student usability team in a variety of locations in Calgary Alberta between November 20th and 30th, 2021. The purpose of this test was to assess the usability of the CPL website and onboarding process for new users: examining the navigational elements, the flow of information, and the information architecture of the service.

In general, participants found the CPL website straightforward and easy to use. The highest rated categories were:

- **'Free Services'**, this label is clear and direct. Participants understood what content would be within this page.
- **'Indigenous'**, participants liked that this information is compiled in one place. The organization and hierarchy are clear, although this information could be linked more frequently in other places across the site.
- **'Digital Library'**, Most participants easily recognized 'digital library' as something that would help them find resources for a task. Clear organization using different cards for different topics.

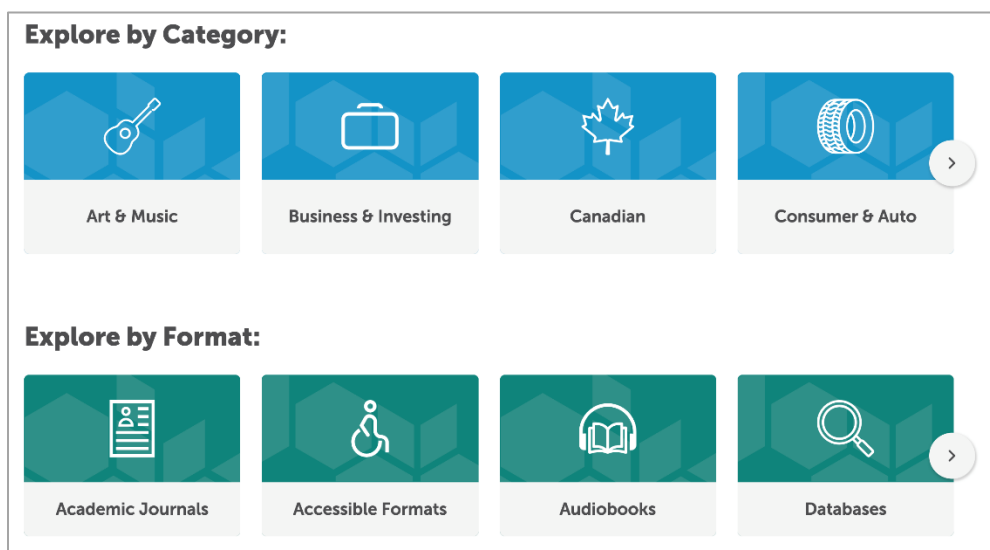


Figure 1 Above, Digital Library page organization system

However, after the session as many as 40% of participants reported they felt the website was needlessly complicated and cumbersome, some expressed concern about their ability to use the site confidently without the need for assistance from tech support. More than 50% of participants expressed moderate to severe difficulty with at least half of all tasks presented, and three tasks reported outright failures, with only 85-90% of participants reporting success in those instances. Confidence levels consistently decreased as the testing session progressed, corresponding with the increased rate of uncertainty and task failure rate discouraging participants.

On average, considerably more time was spent on two specific tasks: membership registration and accessing student resources. Lastly, there was significant variance in the detail of responses and in the consistency of responses for purpose of qualitative analysis. This can be attributed to the large variety in testing parameters caused by the additional layer of complexity added to testing during covid-19.

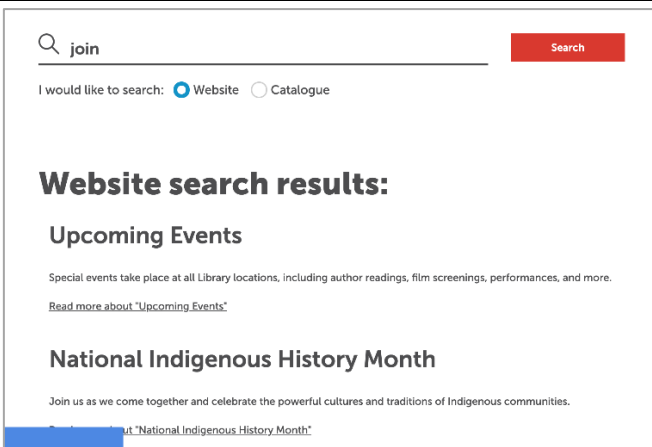
Issue:	Explanation and recommendation:
Search engine	<p>Improve the search results generated for users by prioritizing related query terms.</p> <p>Currently, searching terms which are commonly associated with membership does not produce the membership information page, signup page, or login page as users expected.</p>
	<p>Examples terms include:</p> <ul style="list-style-type: none"> - 'Sign up', - 'Join', - 'Membership', - 'Card' <p>Additionally, the results of 'Hours' were unexpected and confusing to participants.</p> <div>  </div> <p><i>Figure 2 Results for 'join' query</i></p>
Inconsistencies	<p>A few of the navigational labels felt ambiguous to participants which led to some confusion and backtracking while searching for items during the test session, such as:</p>
	<p>'Students' - Although all content on the page is labelled for kids or teens, the overall menu label is students. Many participants didn't anticipate that this category would be for young children.</p> <p>Recommendation: the label 'Kids & Teens' would be more consistent with labels such as 'Babies & Toddlers'</p>
	<p>'New to Canada' - Participants understood what this label contained but were confused when services and programs for newcomers weren't linked there.</p> <p>Recommendation: Include direct link to 'Programs' page, potentially with search filters pre-filled.</p>
	<p>Some pages looked so similar that they confused participants:</p> <p>Recommendation: Ensure consistent visual cues and labels sitewide</p>
	<p>'Digital Library' - After clicking on a card on the Digital Library page, it appears that the user is taken to the top of the same page, because it looks identical to the first.</p> <p>Recommendation: A potential solution would be to slightly change the banner image or add a subtitle underneath the page title.</p>
Ambiguous hierarchy	<p>'Locations' - Menu label is 'Locations', but the page is called 'Hours & Locations'.</p> <p>Recommendation: 'Hours' might be beneficial to include within the menu labels.</p>
	<p>'Read, Learn, and Explore' - This is a very broad label, and we found that it didn't add any clarity to the content underneath it. No participants used this label for clarification when searching for academic journal articles.</p>

Figure 3 Issues in order of significance: critical issues in red – minor issues in orange.

3: Methodology

Sessions

Before the test sessions began, the moderator welcomed the participants, introduced themselves, and explained the parameters of the test. Participants were asked for their consent before participating in the test, and all who participated signed and received a copy of the confidentiality and disclosure agreement. Then, the moderator demonstrated how to 'speak aloud' while working through a task and provided an example of data that would be collected from participants. Participants were asked to complete the task within ten minutes, at which point they would proceed with the next task.

All data, including moderator's observations, participant's feedback, task success, confidence rating, SUS score, and completion time was recorded using the UX Focus 'Data Logger' worksheet. Participants were asked to score the difficulty of each task after completing it, from 'very easy' to 'very difficult', or 'assistance needed' which, in addition to 'failure', denotes a failure to complete the task. The moderator documented any observations or commentary they chose to report for each task within their worksheet, asking the participant to rate their level of confidence with the task, using a scale from 1 – 7 before moving on.

The test sessions were moderated and took place in either the participant's or the moderator's home, or online using Google meets, a decision made to reduce potential risk related to conducting an in-person test during a pandemic. During the session, the moderator tried to remain passive, hoping to have little to no influence on the participant's experience with each task. The sessions lasted approximately half an hour each, however some participants required significantly longer to work through the test than others. In fact, the average time taken to complete the test was roughly 35 minutes.

After the final task, the participants were asked to complete a satisfaction survey, called System Usability Scale (SUS). Participants rated the service using a 5-point Likert scale (strongly disagree to strongly agree) in response to the following ten statements:

- I think I would like to use this software product frequently.
- I found the product unnecessarily complex.
- I thought the product was easy to use.
- I think I would need Tech Support to be able to use this product.
- I found the various functions in this product were well integrated.
- I thought there was too much inconsistency in this product.
- I imagine that most people would learn to use this product very quickly.
- I found the product very cumbersome to use.
- I felt very confident using this product.
- I need to learn a lot about this product before I could effectively use it.

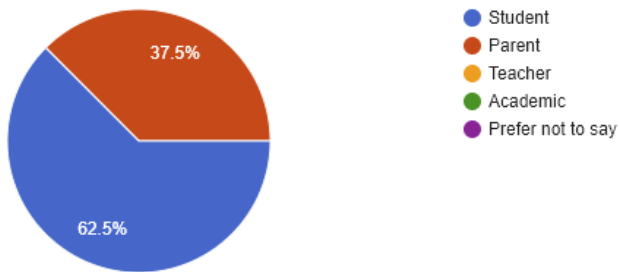
After the session, the moderator met with their participant, thanked them for their time, and spoke tragically of the unfortunate circumstance which forbid them to offer a reward such as candy, coffee, or cake, as they normally would but could not, due to the pandemic.

Participants

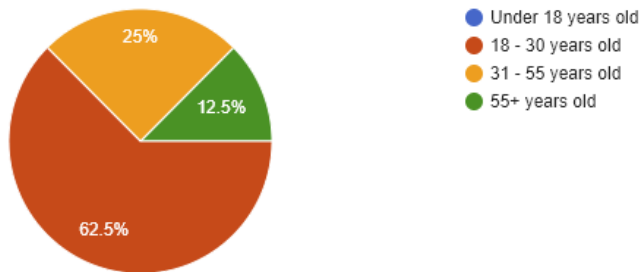
Participants were chosen based on three factors: availability, demographic, and safety in the context of covid-19. As a result, all eight participants knew their moderator prior to taking the test, and most were confident using a phone or computer to access online services in some manner. Due to the nature of the service, the conditions and content of the test, the moderators, and the participants, not every task was approached, assessed, or completed in an identical manner.

Before the session, participants were asked to complete the following questions to establish a baseline of their demographic and familiarity with the service. Six of the eight participants had previously used the Calgary Public Library, however, only two of those participants had used online services, such as Libby.

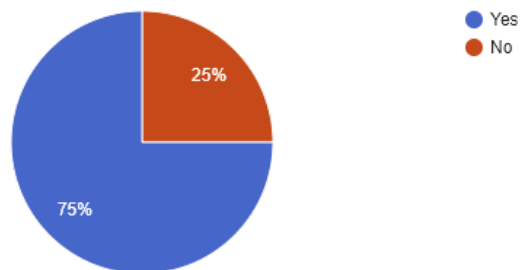
1. Which demographic best describes you?



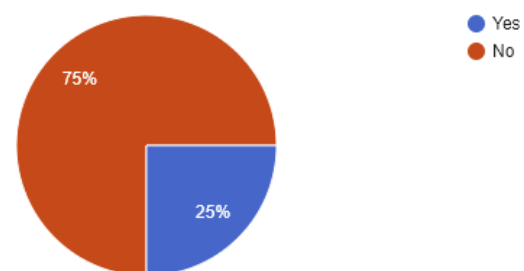
2. How old are you?



3. Have you used the Calgary Public Library before?



4. Have you used the online services offered by the Calgary Public Library? (Such as Overdrive or Libby)



4: Results

Task summary

Test participants attempted to complete the following self-directed tasks: **[chartLabel]** shown in brackets

1. Sign up for a library membership **optional* **[libCard]**
2. Locate the available free services offered by the library **[libServ]**
 - a. Are there any services which are exclusive to members? **[servExc]**
 - b. Does the library offer wellness services? **[servWell]**
3. Locate the Indigenous placemaking art installation page **[Indg]**
 - a. Was there an installation this year? **[IndgYr]**
4. Locate the library's programs designed for newcomers to Canada, specifically teens **[libProgs]**
 - a. Are any of these programs offered online? **[progOn]**
 - b. Locate other services designed specifically for teens **[progTee]**
5. Does the library offer any services to assist students with academic research? **[libStu]**
 - a. Do these services require a membership? **[stuCard]**

Task completion rate

Participants reported success in completing most tasks. However, due to the small sample size and the self-directed nature of this test, it is difficult to quantify the quality and accuracy of their reported success. To account for this, resultant completion scores are calculated using a binomial distribution with the participant's self-reported confidence ratings. After each task, participants were asked how confident they felt with the result of the task they just completed, on a scale from 1 – 7. However, the ambiguity of this measure could have an unintentional impact on the correlated data. For example, without a clear definition of value derived from their success, it becomes difficult to draw correlations between this report and the usability of the CPL site in practice.

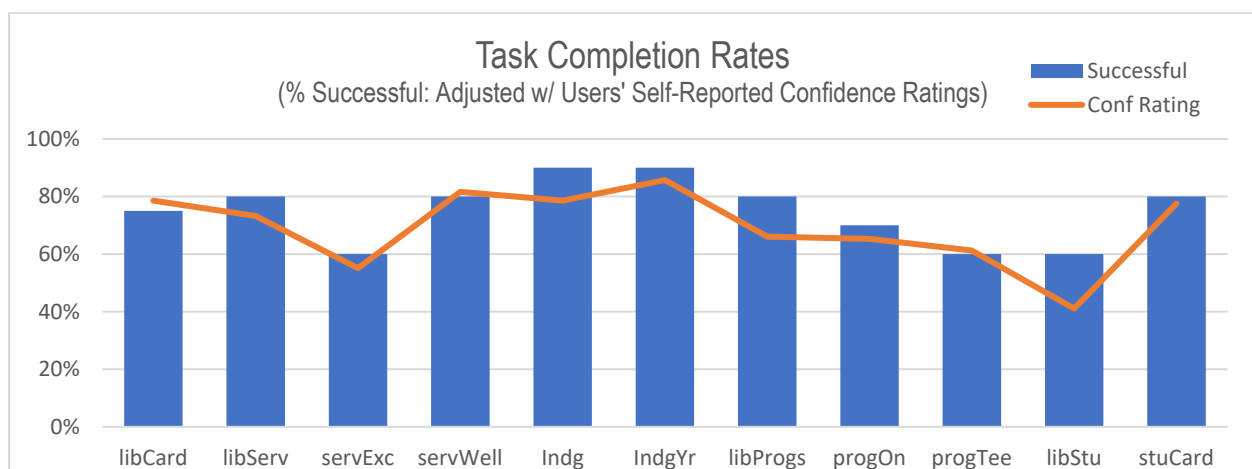


Figure 4 Task completion rates, with participant's reported confidence rating overlaid as a line graph

Another factor to consider when measuring success and completion rates is accuracy. Did the participant complete the task correctly, or did they *think* they were correct? This discrepancy in the measure of correctness could have a major

impact on the data and change a great of what is presented in this report. Moderators attempted to standardize this variation by supervising the test session, however it was reported that task five was ambiguous and could be revised to improve clarity.

Task performance ratings

After each task, participants rated the difficulty level of the task they just completed, ratings range from “Very easy – Very difficult”, along with the responses of ‘Assistance needed’ and outright ‘Fail’.

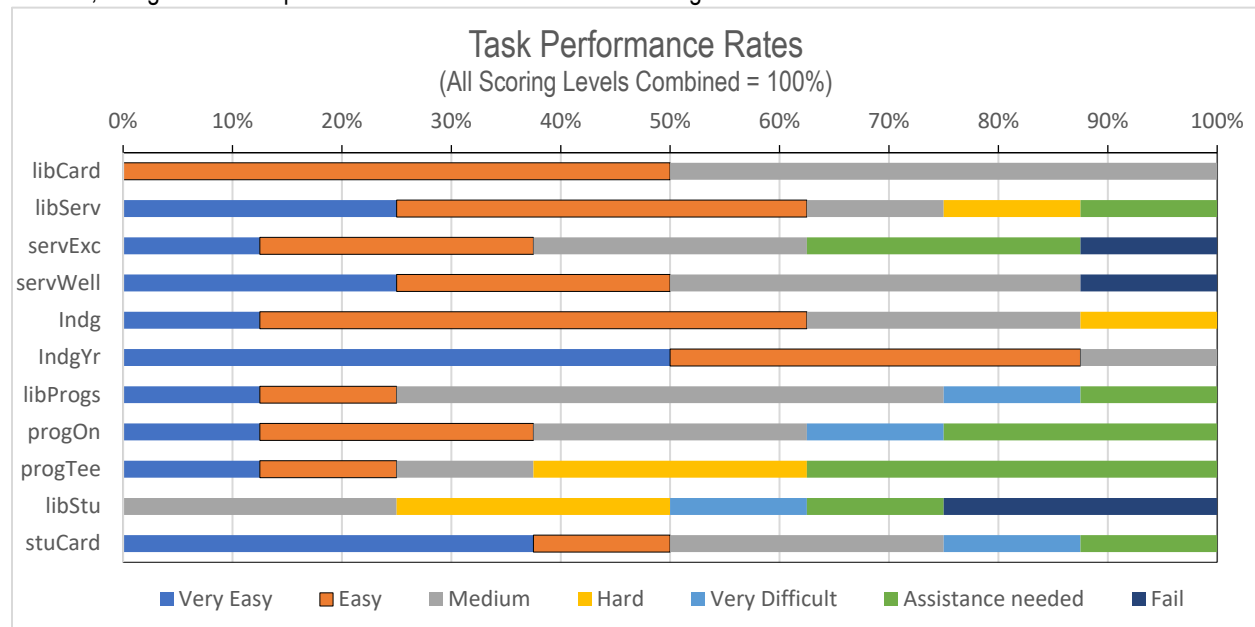


Figure 5 Combined performance metrics, difficulty as rated by the participants after completing each task

At least 25% of participants found all tasks to be ‘Easy or Very easy’, except for the fifth task, ‘assistance for a student conducting research’, of which no participants found the task ‘Very easy’ or ‘Easy’. At least 30 – 40% of participants found one or more task unable to complete without the assistance of the moderator, such as locating member service exclusivity, helping students with research, and identifying programs designed for teens. According to the data, all participants found the student assistance task to be the most difficult, based on 75% reporting the task as ‘Hard’, ‘Very Difficult’, or ‘Fail’.

Time on task

Participants were timed by the moderator using the macro included in the worksheet (provided it was functioning). The time-keep macro was not automatic, and therefore prone to human error, in this case forgetting to start, stop, and/or reset the timer will result in an inaccurate time being recorded. Some tasks were considerably more difficult to complete than others and this is reflected in the average time spent on that task and the rated difficulty

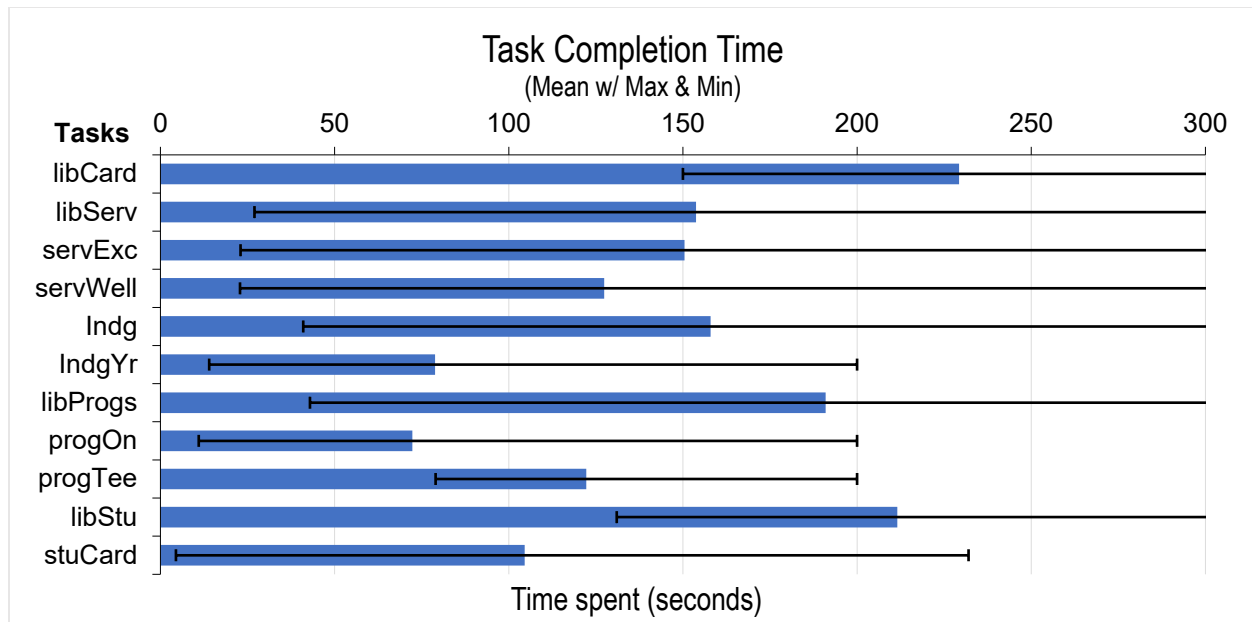


Figure 6 The mean time spent on each task, with maximum time spent indicated with an error bar

For example, task 1, which required participants to register for a library membership, took the most time to complete on average (~230 seconds), while task 2 had the largest variance between participants and took more time to complete overall (~425 seconds).

Post-session questionnaire

After the final task, the participants were asked to complete a satisfaction survey, called System Usability Scale (SUS). Participants rated the service using a 5-point Likert scale (strongly disagree to strongly agree) in response to the following ten statements:

1. I think I would like to use this software product frequently.
2. I found the product unnecessarily complex.
3. I thought the product was easy to use.
4. I think I would need Tech Support to be able to use this product.
5. I found the various functions in this product were well integrated.
6. I thought there was too much inconsistency in this product.
7. I imagine that most people would learn to use this product very quickly.
8. I found the product very cumbersome to use.
9. I felt very confident using this product.
10. I need to learn a lot about this product before I could effectively use it.

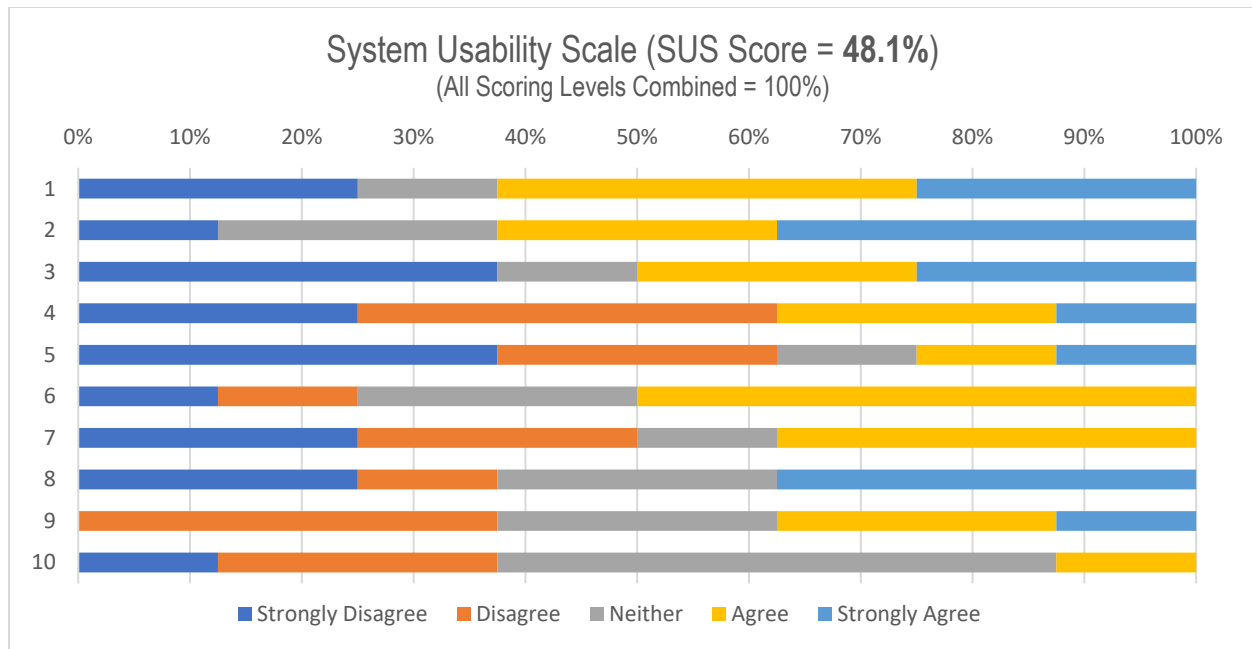


Figure 7 SUS score as indicated by participants. In general, responses appear to coincide with reported confidence level

Unfortunately, more than half the participants reported being neither satisfied nor dissatisfied with the usability of CPL's services, a large percent answered neutrally, that is neither agree nor disagreed with the statements. This suggests apprehension toward the product in general, both in using it as it exists today, and to use it again in the future. Just under half of the participants reported the product being cumbersome to use. This can be attributed to the lack of clarity among navigation labels along with the lack of structure in information presented on various pages throughout the website. However, over half of the participants reported feeling they would have to learn more about the product before being able to effectively use it, so perhaps bridging this gap of knowledge can assist users to have an easier time navigating the website.

5: Reflection

Conclusion

While most participants reported they felt confident using the website and that the services appeared easy to use, there were some problematic areas identified. For example, many website navigation labels appeared unclear to participants and often resulted in them second guessing which label to click on for tasks. While the overall navigation labels are relatively clear, the information provided within the sub-pages often did not return what the participants expected to find on that page. As found in the SUS Questionnaire, most of the tasks left participants dissatisfied with the website. To improve this, the navigation labels should be updated to reflect what most users expect to find on a particular page.

Appendix

Moderator Script:

Introduction

Hello, my name is *(say name)*, and I am going to talk you through the session we will be going through today and testing. As I have mentioned before to you, this is for our class project and to get more information about the Calgary Library's website. This test will be between us and no one else will be in the call if online or if in person will be just us two present.

I would like to say thank you for taking the time out of your day to speak with us and participate in our test. Your opinions and feedback are very beneficial to us and give us the right information that will help make the website better and more user friendly. For this session it will take about 30 minutes, is that still okay with you?

Perfect, if a break is needed or you need to stop at any point, please let me know.

During the duration of this session, I will be asking a few questions about you, some reassurance because there are no wrong answers and if need be, try a little bit to keep you speaking out loud. While you go through the website, we would like you to think aloud about your thoughts on the website and what you are doing. This will help us get a true understanding of how the website functions.

If you have any questions about the website or anything, please feel free to ask and I will do my best to answer it.

Lastly before we get going, I want to confirm that you have received and reviewed our consent form prior to today.

(If online test, ask for them to email it to us, if in person make them read and sign it now)

Do you have any questions about the consent form? Great, let's get started!

Warm up

First off, I want to ask you some questions about yourself. What do you currently do for work? Do you have a Calgary library membership? If not, would you be interested in getting a library card? Do you know of any of the services that the library offers other than renting our books?

Task completion

Now we are going to start the test and go through a couple scenarios to really test the website functions. I will walk you through the task I am giving you to give some background, if you need me to repeat it at any point, let me know.

To start off, please open the link to the card sorting activity. This one you will be given a few options for what different sections and labels are on the website, a few we will give you to choose from and some for you to make up on your own.

(Finish the card sorting)

Next, open the URL I sent you earlier today. Firstly, tell me your initial thoughts of the website as you scroll through it and think out loud. *(Then, start reading out the tasks)*

Follow up

Perfect, we have finished most of the test and the tasks that we need to complete. *(Ask about something if they mentioned anything that stuck with you, and you might want to clarify)*

Do you have any thoughts or questions about the process we just went through or the tasks I asked you to complete?

Lastly, we ask if you can fill out a SUS questionnaire about your thoughts and feelings about the website as a whole and going through the process.

Wrap up

Once again, thank you for your time and participating in our study today, your thoughts and feedback are very much appreciated.

Protocol Outline:

Objective

The overall objective is to test the current information architecture of the Calgary Public Library website.

We will test the current site layout to see if a variety of users are able to locate desirable content through the CPL website. The overall goal is to gather information on how appealing and intuitive the current site is for current and potential users. These usability tests will take place in various locations, between November 20-30, 2021, at times that are most convenient for participants. Moderators will take care to recruit users who do not currently hold a Calgary Public Library membership, as well as users who do have a membership. If necessary, there may be two rounds of user testing, depending on the response of the initial round. Based upon the evidence gathered, there may be value in testing a prototype for comparison to the current site.

Data Collection Methods

For the user testing sessions, the majority of data collection will be through Optimal Workshop and the Datalogger spreadsheet. Participants will be sent a link to a usability test activity, which they will complete while meeting with a moderator. The moderator will facilitate the activity, as well as guide the user through the four website tasks. The moderator will also collect confidence levels, difficulty ratings, time on task, and SUS Questionnaire in the Datalogger spreadsheet. All Datalogger spreadsheets will be combined at the end of user testing to generate charts and insights.

All data will be stored on a shared Google Drive accessible only by the four moderators, or personal computers belonging to the moderators.

Testing Conditions

In-person user testing will depend on ability to adhere to COVID-19 restrictions. No preference will be given to in-person or virtual testing, and the same data will be collected in either case.

Preference for virtual user testing is Google Meets, although exceptions can be made for users who prefer other methods. During usability testing, moderators will collect information on the participants' general computer specifications, current browser, and preferred ways of using the internet.

Test Parameters

Each usability test session may take up to 30 minutes. Each task should take around 5-7 minutes, and if that time is exceeded, the moderator will prompt the participant to move on to the next task. If the total time is exceeded, the moderator can decide to wrap up the session even if not all tasks have been completed.

Usability Test Protocol

Greet the Participant

For this section, read the Moderator Script, but let the participant know that you will be reading from a script. Give a brief introduction of yourself, and your goals. Keep a positive attitude, and optimistic tone throughout the process.

- Introduce yourself and thank the participant for joining.
- Establish your goals and let the participant know that you may be recording the session/taking notes/typing.
- Let the participant know that the objective is to test the website, not them.
- Provide a time frame for the usability test (approx. 30 minutes).
- Let them know that they can choose to stop the session at any time.
- Provide the opportunity to ask questions.

Consent Form

After the participant has listened to the entirety of the Moderator Script, and signaled their understanding, have them read and sign the consent form.

- For virtual testing, have the participant email a signed copy of the consent form beforehand.
- Provide the opportunity to ask questions.

Collect Demographic Information

Briefly converse with the participant and collect some basic information about them. (Form if desired)

Begin the Card Sorting Activity

Send the participant the necessary link to the activity. Walk them through the introduction information and encourage them to ask questions if needed. This activity should take around 5 minutes total.

- Have them share their screen if remote.
- Remind them that there are no wrong answers.
- Ask them to talk through their thought process.

If the participant hasn't completed the activity in 5 minutes, prompt them to submit any progress they've made and move onto the next tasks.

Begin the Website Tasks

Ask the participant to go to the website. Remind them to think out loud as much as possible. Introduce the task by reading it out loud, as well as giving them a printed/digital copy to refer to.

- Have them share their screen if remote.
- Remind them that there are no wrong answers.
- Record data using the Datalogger spreadsheet (confidence levels, difficulty ratings, success/fail, time on task).
- Note any positive/negative feedback, body language, or questions.

If the participant hasn't completed the task in ~7 minutes or becomes overly frustrated, prompt them to submit any progress they've made and move onto the next task.

Complete the SUS Questionnaire

Guide the participant through the SUS Questionnaire. The moderator may record the SUS answers in the Datalogger spreadsheet, or by another method if deemed necessary.

- This should take no more than 5-7 minutes.
- Prompt the participant to give their honest feelings about the website.

Final Thoughts

Ask the participant if they have any final thoughts or comments about the site. Clarify any details you need to at this point. Give them the opportunity to ask any questions.

- Thank the participant for their time and effort and wrap up.
- Provide incentive or compensation.

Signed Consent and Acknowledgement:

CPL – Confidentiality and Disclosure Agreement

Website: Calgary Public Library



Purpose of this study

We will test the current site layout to see if a variety of users are able to locate desired content through the CPL website. The overall goal is to gather information on how intuitive the current navigational labels and organization of content is for current and potential users. These usability tests will take place in various locations, between November 20-30, 2021, at times that are most convenient for participants. Moderators will take care to recruit users who do not currently hold a Calgary Public Library membership, as well as users who do have a membership.

Information we will collect

For the user testing sessions, the majority of data collection will be through Optimal Workshop and the Datalogger spreadsheet. Participants will be sent a link to a usability test activity, which they will complete while meeting with a moderator. The moderator will facilitate the activity, as well as guide the user through the four website tasks. The moderator will also collect confidence levels, difficulty ratings, time on task, and SUS Questionnaire in the Datalogger spreadsheet. All Datalogger spreadsheets will be combined at the end of user testing to generate charts and insights.

Testing conditions

In-person user testing will depend on ability to adhere to COVID-19 restrictions. No preference will be given to in-person or virtual testing, and the same data will be collected in either case. Preference for virtual user testing is Google Meets, although exceptions can be made for users who prefer other methods. During usability testing, moderators will collect information on the participants' general computer specifications, current browser, and preferred ways of using the internet.

Each usability test session may take up to 50 minutes. Each task should take around 7-10 minutes, and if that time is exceeded, the moderator will prompt the participant to move on to the next task. If the total time is exceeded, the moderator can decide to wrap up the session even if not all tasks have been completed.

Freedom to withdraw

If you like, you are more than welcome to refuse to participate, take a break, or withdraw from the study at any time during the session. Please inform us of this if you would like one.

Signature of participant

Name

Date

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