

# Iterative design principles for learner-centred tutorial development

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Introduction



- Publicly funded, medium-sized, undergraduate institution in Western Canada.
- 11,000 full time students

The image displays three educational interface components:

- Searchpath:** A navigation menu with six steps: 1. starting smart, 2. Choosing a topic, 3. using library catalogue, 4. finding articles, 5. using the Web, and 6. finding sources.
- Table of Contents:** A list of course modules including 'Welcome to the Psychology', 'Module A: Information in Ps...', 'Peer Review Process', 'Module B: Finding Sources', and 'Module C: APA & Citations'.
- APA In-text Citation:** A page titled 'Paraphrasing & Page Numbers' featuring a video player and a cartoon dog asking 'Should you include page numbers?'.
- Chemistry Tutorial:** A tablet screen showing a tutorial titled 'Organic or Inorganic?' with chemical structures for Ethanol ( $C_2H_6O$ ) and Aluminum Oxide ( $Al_2O_3$ ).

### History of our tutorials:

- Started with HTML and flash → then switched to Adobe Captivate video modules → Now, still using Captivate, but making sure they are mobile compatible (publishing in HTML5).
- We've also expanded out tutorials. Started with SearchPath for English, now we have tutorials for a number of subject areas, including chemistry, nursing and psychology (these are the 3 tutorials we used for this round of usability testing).
- With some tutorials (psychology) we've taken them over from our institutional instructional design department - this allows us to have more control over the content and we can respond faster when changes are needed.
- Our tutorials are available to students as BlackBoard self-enroll courses - explain how this works.

## Usability Testing Process

- 2 librarian observers
- Computer → iPad
- Increasing frequency

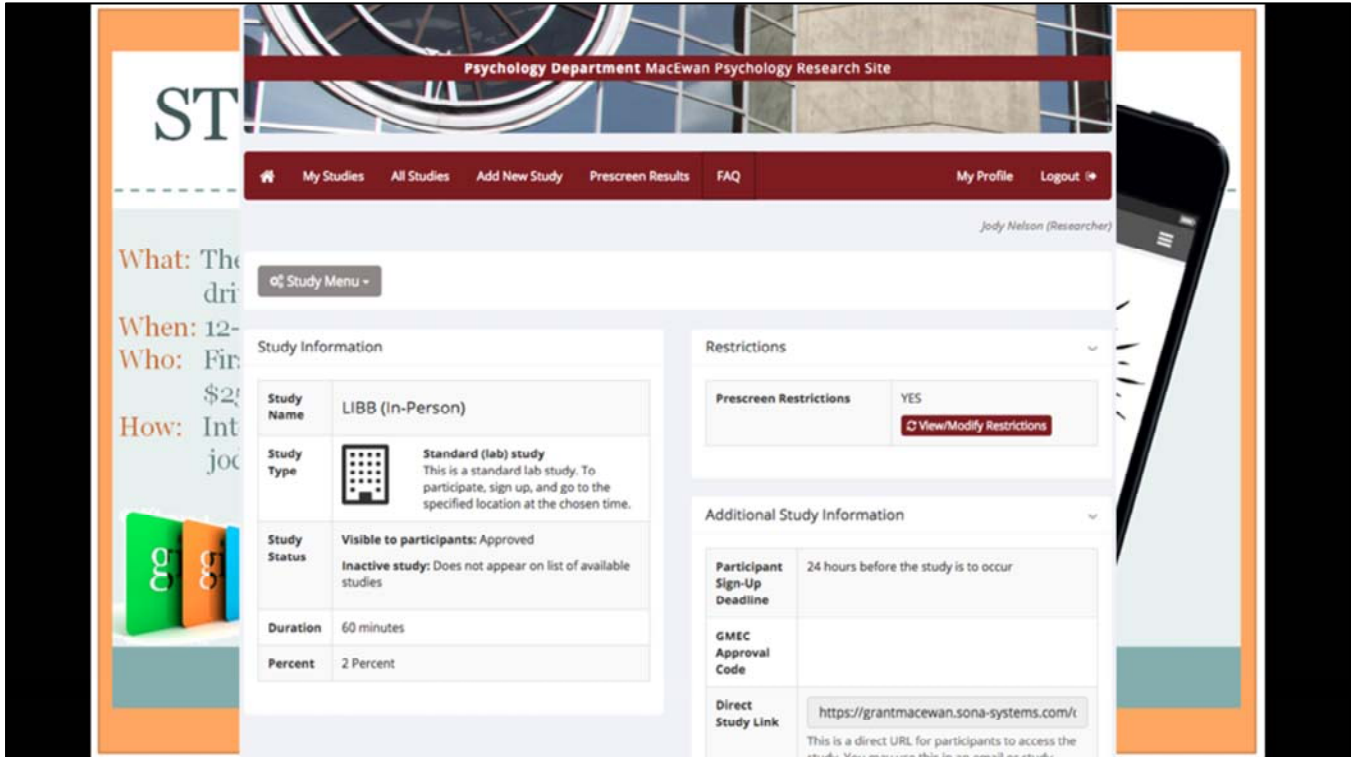


### **Usability testing process**

- We observe them working through a selected number of our tutorial videos. We used to do it on a laptop and now we do it on an iPad, so that we can test mobile usability.

### **Evolution of our user testing**

- more frequent testing - usability testing multiple times per year and survey the students after completing the tutorial every semester.
- We can be more responsive to user needs when we test more frequently and make more small frequent changes.
- Pace of technology almost demands this



More frequent user testing means recruiting more students!

Two different ways we recruit:

1. Advertising on social media and flyering the library and offering incentives (\$25 gift card to Starbucks or a nearby grocery store).

2. One of our tutorials is for psychology and we have a good working relationship with that department. First year psychology students are required to be research participants and they get credit for this. Psychology has allowed us to add our usability testing as a project in their internal research participation system.

Pros and Cons of the two methods.

- Advertising takes a lot of work and you don't get many students expressing interest. Also more expensive. But, anecdotally, we seem to get better feedback from these students. Maybe they feel they should work for their \$25 gift card? We also get a more diverse group of students (from different disciplines and different years of study).
- Using SONA is very easy and we get lots of participants but they are all from the same discipline and are all first years. They tend to be a bit more apathetic about it. Fills up fast because students are required to do one face to face study and one online study. There are lots of online studies and ours in one of only a few face to face studies.

## Findings from User Testing



“I think they could go on a little bit longer”

“I think somebody would figure it out fairly quickly”

“not too slow, not too fast, just OK” and  
“not too fast, not too slow, everything is clear”

### Findings from user testing

- We often learn important things from observing student's completing the tutorials.
  - too many computer-centric elements (e.g., language + content: Instructions to click, mouseover for options) - led us to create mobile friendly tutorials with mobile friendly language (click or tap, instead of click). We eliminated any interactions that didn't work on a touchscreen device.
  - We added more engaging visual elements, and more text on the screen so that there is always something to look at. Text on the screen acknowledges that lots of our students like to read the content.
  - out of the box Captivate interactions that did not translate well to the mobile context (e.g., hotspots, drags & drops, text-entry boxes). We ended up building our own interactions using other elements of the software.= *Click boxes for everything!!*
- We made a lot of changes but we still didn't have a good sense of the student experience of completing the tutorial - their verbal feedback is not always helpful and often demonstrates a reluctance to be critical of the tutorial in front of us.
- Examples of verbal comments:
  - “I think they could go on a little bit longer” - unlikely that they'd really want a longer video
  - “I think somebody would figure it out fairly quickly” - excusing problems with it
  - None of our users found the CC button right away but they didn't attribute

this to some flaw in the video, instead they'd apologize to us for not finding it right away.

- When asked about length or pace "not too slow, not too fast, just OK"; "not too fast, not too slow, everything is clear" - almost no one said it was too fast, when we could sometimes tell from their body language that they found the pace too fast.

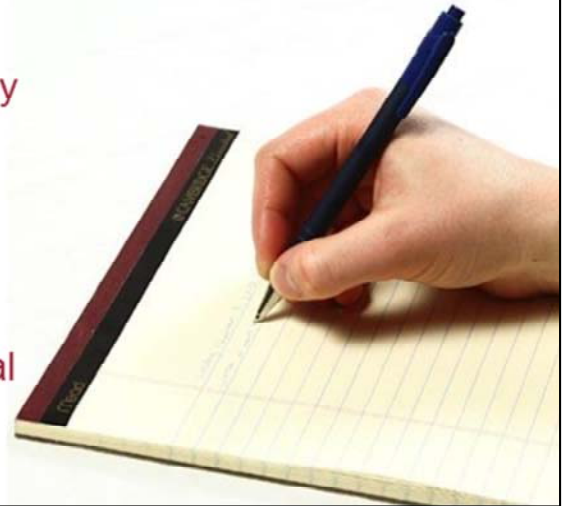
## Findings from Follow-up Survey

“At first it was hard to orientate to the site as it was in the [BlackBoard] folder, however once there it was ok”

“I would like to do this type of tutorials in every future nursing course that involves research”

“It is not the most interesting topic, in my opinion, but it is very useful and helpful”

Overall most students express that the tutorial was easy to use and navigate and that the content was engaging and useful.



Decision to supplement user testing with a survey

- So that we can get better feedback about the student experience of completing the tutorial.
- We get very different comments, more critical comments
  - “At first it was hard to orientate to the site as it was in the [BlackBoard] folder, however once there it was ok” We’d never get this comment in user testing because we take them into the tutorial (nursing)
  - “I would like to do this type of tutorials in every future nursing course that involves research.” Still get the positive comments (nursing)
  - “It is not the most interesting topic, in my opinion, but it is very useful and helpful.” typical sentiment (psyc)
  - Overall most students express that the tutorial was easy to use and navigate and that the content was engaging and useful.



## Considerations

- How will students complete it?
- Working with IT
- Working with professors

“Videos are extremely boring especially because we did it twice last year”



### Things to Consider

- How will students complete it - chose BB because it can be built in and associated with a completion credit.
- Working with library IT
- Working with course instructors - their buy-in is necessary!
  - determine best course fit (e.g., we tried first year & second year courses, but despite instructor enthusiasm, found that it resonated best in second year - psychology)
  - Downside of too much uptake:
    - Students may be expected to work through it informally multiple times before it comes time for formal credit. “Videos are extremely boring especially because we did it twice last year” Comment from nursing student in our survey.
    - FUTURE QUESTION! Do students ever *return* to the tutorial post-completion? Or do they only see it as a one-time resource. (In Nursing more students are in the self-enroll course than can be accounted for, which means a few students are adding it to their BB without being required to do so by a course).
  - Embedded in BB - 88% successful completion in PSYC 212, getting 86% or higher on it (7=0, 3= <6)
  - Embedded in BB - 100% completion in NURS 270, getting 83.3% or higher.

(it has over 100% enrolment)

## Lessons Learned & Best Practices

- Stakeholder involvement early, often and throughout\*
- User testing + a survey
- Recruiting methods
- Timing of changes

\*Brhel, M., Meth, H., Maedche, A., & Werder, K. (2015). Exploring principles of user-centered agile software development: A literature review. *Information and Software Technology*, 61, 163–181.



### Lessons learned and best practices

- Best practices from the literature:
  - Stakeholder involvement early, often and throughout - a key principle of agile software development and user-centred design
- Best to do user testing and surveys
  - User testing allows you to observe students working through it and you can identify problem spots
  - surveys provide insight into the student experience of completing the tutorial
- Pros and cons of different recruiting methods
- Timing big overhauls of the tutorials to correspond with big website changes.

*Brhel, M., Meth, H., Maedche, A., & Werder, K. (2015). Exploring principles of user-centered agile software development: A literature review. Information and Software Technology, 61, 163–181.*