

Teaching Tip

Usability – A Teaching and School Service Project

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ABSTRACT

Your next usability project could be waiting for you in the college library, registration office, or online admissions process that your college or university utilizes in their daily transactions. As an added bonus, these exercises supplement the IS2002 curriculum model, benefit the instructor's institution, build inter-departmental collaboration, and can provide an individual or team project for classes or student clubs in the information systems or computer science academic areas.

Keywords: Usability, Human-Computer Interaction, IS2002 Curriculum Model, Design Competition

1. INTRODUCTION

Usability of information systems (IS) is becoming increasingly important as a discipline as more business processes, educational research, and amusement choices are located on the web. However, usability is not (formally) a component of the IS2002 model curriculum utilized at many institutions of higher education (IS2002, 2002). This teaching tip addresses how faculty can incorporate usability into their curriculum, address change in the information systems field, and engage all levels of IS or CS students in the process. As an added bonus, these types of activities can build relationships across functional boundaries in the college/university environment, while also enhancing communication, working relationships, and can enable faculty to "lead by example" for students in IS programs.

2. FINDING THE USABILITY CHALLENGE

The dynamic nature of all processes on the web means that a usability challenge awaits you at one of your college offices. A foray into the college library yielded the first usability project for the academic year. Upon selecting the appropriate set of instructions (paper copy) for renewing library materials online, the renewal process was attempted.

Working remotely and following the directions explicitly, errors in the process were encountered. Advertised buttons and text boxes were not present, login instructions were incomplete and page directions were misleading. While technically trained individuals would be able to supplement the directions with their explicit knowledge, the average college/university user might be tempted to quit the online

renewal process in frustration, eliminating the benefits (to the college/university staff) of an automated process. The usability dimension of the paper document had not kept pace with the web upgrades and changes, necessitating a review of the process. This review process will be faculty-led, and will introduce all levels of students (this topic is very accessible to lower level students who are coming into the college/university well-versed in web tools) to the basic elements of usability in a real-world example.

Not only is usability a contemporary topic of interest in the information systems community, but one that is not incorporated (explicitly) into the series of courses offered for any IS degree which follows the nationally normed curriculum model, IS2002 (2002). As usability has been an emerging concern among information technology workers (Calisir and Calisir, 2004; Flavian, Guinaliu, and Gurra, 2006; Krug, 2000), this exercise exposes students to a dimension of IS they might not otherwise encounter.

In an effort to be courteous to the library staff, an inquiry was posed to the library director. The inquiry went something like this: "the directions for online renewals seem slightly misleading... would you mind if this was used as an example of bad usability for library patrons? In the process, a new, more accurate form will be produced for the library's use." The director was actually appreciative that the form would be getting an update, so began the exercise.

3. USABILITY

As an introduction, a usability lecture was presented to an AITP student chapter group with ideas on usability, what

makes good/bad usability, why people care about usability, and usability as an emerging theme and field of study (Human Factors International, 2008). Two of the primary definitions regarding usability were discussed, these were:

- The efficiency of a user completing a task, for example, on a web site
- The ease of use of a system in accomplishing a task and the user's perception of the system in terms of ease and positive experience

Following the definitions, a discussion on how to measure usability was presented, with the key topics being that usability can be measured:

- objectively via performance errors and productivity
- subjectively via user preferences and interface characteristics (Browne and Jermey, 2004)

The usability exercise for the AITP students involved a set of instructions for accomplishing a task (renewing library materials online) making performance errors and productivity the most applicable measures for the exercise. The goal was to make a sheet of directions that would be easy to follow and assist the user in accomplishing their task with minimal (ideally zero) errors. Additionally, issues such as navigation, eye-tracking studies, how technology is moving in two directions simultaneously (large and small screens), and good web sites for exploring contemporary usability issues (www.useit.com, <http://www.usability.gov>, en.wikipedia.org/wiki/Web_usability.) were presented and briefly discussed, illustrating the range of possibilities for usability and usability studies. Next, examples from sites such as useit.com (Nielsen, 2008) and usability.gov (Usability.gov, n.d.) were illustrated to give the students a basic grasp of contemporary usability concepts before looking at the library's directions for online renewal of items. The next course of action was to follow the directions (exactly) to attempt an online book renewal. Figure 1 illustrates the paper handout that was used for this process.

On-line Renewals

Go to the home page- click on Library- click on find a book
On the left hand side, go to view your record- click on that
Type in your name- 408#

Then a field icon will come on with **Item Checked Out** on
the upper right hand side of the page- select **Renew All** or
Selected Items.

If **Selected Items**- Highlight the little box to the left- then
enter and log off.

**Remember: One renewal on books but none on the
media.**

**Also, if it has been renewed once whether through the
circulation desk or the computer it WILL NOT be
renewed again.**

Figure 1. The online renewal form before usability exercise

During the demonstration a number of errors were encountered with the form. It was pointed out to the students that novice (non-IS) users might have difficulty following these instructions and in accomplishing "work-arounds" to complete the task. Work-arounds can be defined as: A [procedure](#) or a temporary fix that bypasses a problem and

allows the user to continue working until a better solution can be provided (Wiktionary, 2008). The students were then invited to discuss why users might have trouble with the current online renewal form and finding work-arounds for the instructions. Items such as terminology, location of buttons, missing instructions, misleading instructions, and user frustration were posited as potential problems that could hinder the user from task completion. While the group could identify navigation issues, terminology issues, and find efficient and effective work-arounds for these problems, it was assumed that general users might not be as fortunate.

The faculty presenting then posed the challenge to the students to "build a better online renewal form" and discuss the results at the next meeting. After the students explored the online renewal process on their own, a group exercise to clarify the instructions for the library site was the focal point of the next meeting. What came out of that meeting is given in Figure 2. Comparing Figure 1 and Figure 2, it can be seen that navigation errors, terminology errors, data input directions, and data location errors have been addressed and corrected. Reviewing the revised directions and following them exactly yielded two results for the library's (new) online renewal form:

- task completion
- zero user errors.

Online Library Renewals

1. Go to the State College home page and click on "Library" in the right hand navigation column.
2. Click on the "Find Books, Videos, etc." link.
3. In the Library Links column (right column) click on the "View Your Record" link.
4. In the text boxes type in
 - a. your name
 - b. your library number (located on the bottom of your student ID card) click the submit button
5. In the blue links box, click on the first link that states "*n* items checked out," where *n* is the number of items you have checked out.
6. In the renew column (left hand column) of the blue "items checked out" table, use the check boxes to select the items you want to renew (or use the *renew all* button if you wish to renew all checked out items).
7. Click the "Renew Selected Items" button.
8. Make sure your new status (due date) is correct in the fourth column in the items checked out table.
9. That's it! Click the Logout button in the upper left hand portion of the screen to finish.

Thank-you for using the online renewal process at State College.

Have a great day!

Note: One renewal on books, none on other media!

Figure 2. The online renewal form after usability exercise

The resulting instruction set (Figure 2) for online renewals was much more accurate and algorithmic than the previous instruction set, yielding a more usable and accurate handout for the library to give to its patrons. The library

director was impressed and thanked the students for their work (the library director was invited to the final presentation and demonstration of the form). The new form is currently in use at the library.

4. CONCLUSIONS

A usability exercise was utilized in an academic environment to address a real-world problem and to illustrate to students the importance of usability in the IS discipline. This exercise supplemented the students' knowledge set by addressing a topic not found in the IS2002 curriculum model which is followed in this IS department. Further benefits of such an exercise included enhanced inter-departmental relationships and more usability studies (= more exposure for the students) as illustrated below:

While the usability exercise was fun, entertaining, and educational for the students, it was also useful for the library and the library's user group. After the online renewal study was complete, the library director posed another usability challenge to the students, this one dealing with the library's home page, and remote access to proprietary databases located on this page.

"It seems that off-campus (non-authenticated by the network) users were keeping the phone lines busy at the reference desk due to confusion on how to access the databases from their home connections. Could the faculty and student group make some suggestions?" (Library Director, 2007)

Thus, a new usability challenge was ready for the group to tackle. As can be seen, your next usability challenge might be just around the corner!

5. REFERENCES

Browne, Glenda and Jerney, Jonathan (2004), *Website indexing: Enhancing access to information within websites*. Auslib Press: Adelaide, Australia.
Calisir, Fethi and Calisir, Ferah (2004), "The relation of interface usability characteristics, perceived usefulness, and perceived ease of use to end-user satisfaction with

enterprise resource planning (ERP) systems," *Computers in Human Behavior* Vol. 20, No. 4, pp. 505-515.
Flavian, Carlos, Guinaliu, Miguel, and Gurrea, Raquel (2006), "The role played by perceived usability, satisfaction and consumer trust on website loyalty," *Information & Management* Vol. 43, No. 1, pp. 1-14.
Human Factors International (2008), Degrees in software ergonomics, Retrieved November 28, 2008 from: <http://www.humanfactors.com/downloads/degrees.asp>.
IS2002 (2002), Model curriculum and guidelines for undergraduate degree programs in information systems, Retrieved November 26, 2008 from: <http://www.aftp.org/publications/model.jsp>.
Krug, Steve (2000), *Don't Make Me Think!: A Common Sense Approach to Web Usability*, New Riders: Berkeley, CA.
Library Director (2007). Personal communication.
Nielsen, Jakob (2008), Jakob Nielsen's Website, Retrieved November 26, 2008 from: <http://www.useit.com/>.
Usability.gov (n.d.), Step-by-Step Usability Guide, Retrieved November 26, 2008 from: <http://www.usability.gov/index.html>.
Wiktionary (2008). Workaround. Retrieved December 26, 2008 from: <http://en.wiktionary.org/wiki/workaround>.

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