Usability testing of the MSU Online Course Listing web site

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General overview

The purpose of this report is to summarize and document findings from usability tests of the MSU Online Course Listing web site. The usability tests were conducted from May 24 through June 5, 2002.

The general goal of the usability testing was to reveal and assess the usability issues of the current MSU Online Course Listing web site.

The quantitative goal of the usability testing was to find out if test participants would be successful in completing each task in less than two minutes.

The tests allowed the test facilitator to witness and to document participants’ experiences as observed first-hand.

Methodology

Usability tests were conducted with seven participants, including two participants from outside MSU, four current MSU students, and one MSU faculty member.

The tests consisted of real-life tasks that would be performed under normal conditions by users of the MSU Online Course Listing web site.

As mentioned above, the majority of test participants were the current MSU students who have used the old version of the MSU online course listing. Two participants were recruited from outside MSU, and they provided information valuable from the point of view of prospective MSU students. One person tested represented the MSU faculty.

Most tests have been conducted using the high-speed Internet connection, with the exception of one test that has been conducted using a 56Kb dial-up connection. The latter test was somewhat a disappointment for a participant and the test facilitator, because it took 30 minutes to connect to the MSU’s server: The server was either down or not responding at that time. In general, there were several problems related to the slow or delayed connection to the MSU server, even from computers with the high-speed Internet connection and from computers located directly on the MSU campus.

Test participants were tested individually. Each test took between 30 and 35 minutes. The test facilitator was timing the participants with the stopwatch. After approximately two minutes into a task, the facilitator would stop the performance of the task and ask a participant to move to the next task. If the facilitator noticed a participant's increasing frustration or disappointment, the facilitator would also stop the performance of the task and ask the participant to move to the next task.

Usability testing consisted of four stages:

1. **Collecting participants’ demographic data**
   
The first stage consisted of having participants complete demographics questionnaire (Appendix A). This stage was mostly aimed to determine participants’ browser preferences, their self-perceived levels of expertise with the Internet, and their expectations of the MSU Online Course Listing web site.

2. **Having participants perform real-life tasks**
   
The second stage consisted of having participants perform real-life tasks, the ones that real users would need to perform under normal conditions on the MSU Online Course Listing web site (Appendix B). This stage was aimed to determine what kinds of usability problems the participants would encounter while looking up information on the web site.

3. **Collecting posttest written data**
   
The third stage consisted of having participants complete a brief written posttest questionnaire (Appendix B). This stage was aimed to gather data on how the participants felt
about the web site after using it. The data included participants’ remarks about what they liked about the web site, what they would change, what they thought about font size and type, about the labels of dropdown menus, and about the colors of the Search Results table.

4. Collecting posttest verbal responses (information recall)
   The fourth stage consisted of four verbal questions that the test facilitator asked participants to answer. This stage was aimed to determine how prominent were the important messages displayed on the web site, to solicit alternative labels for the dropdown menus, and to see if the participants could easily differentiate the data displayed in the Search Results table headings.

Test equipment

Six out of seven usability tests were conducted using IBM-compatible desktop PCs. Five usability tests were conducted using 17” monitors and one test was run on a computer with a 15” monitor. One test was conducted using a laptop computer.

The test participants were given the choice of browser they would like to use during the tests. Even though majority of the participants (86%) indicated Internet Explorer as their preferred browser on the demographics questionnaire, four participants chose to use Internet Explorer, one participant used Netscape 4.3, one participant used Netscape 4.79, and one participant chose Netscape 6.2.

All tests but one were conducted using a high-speed Internet connection. One test was conducted using a dial-up Internet connection from a 56Kb modem.

Participants’ profiles

This section contains participants’ demographic data that were collected using the demographics questionnaire (Appendix A).

- Age
  Four participants (57%) belonged to the age group between 20 and 30 years old, one participant (14%) belonged to the age group between 30 and 40 years old, and two participants (29%) belonged to the age group over 40 years old.

- College students
  Four out of seven participants were the current MSU senior students.

- Gender
  Six participants (86%) were females, and one participant (14%) was a male.

- Browser preferences
  Six participants (86%) indicated Internet Explorer as their preferred Internet browser, and one participant (14%) preferred Netscape.

- Self-perceived Internet expertise level
  Two participants (29%) indicated their expertise level as competent users, four participants (57%) described themselves as advanced users, and one participant (14%) related to the expert Internet user level.

- Success in finding information on the Internet
  Six participants (86%) indicated that they are usually successful in finding information on the Internet, and one participant (14%) responded “always” to the question.
Participants’ expectations and suggestions

This section of the report contains information about participants’ expectations of the MSU Online Course Listing web site prior to conducting usability tests, aspects of the web site they found useful and helpful, and areas of the web site that they would like to change.

Participants’ expectations

This section describes what information participants wanted to be able to find on the MSU Online Course Listing web site before they performed usability tasks:

- Course names
- Course descriptions
- Links to off-campus courses
- Times and dates of classes
- Class locations
- Course level
- Course ID for registering
- Availability of courses
- Names of instructors
- Class cancellations
- Registration information

Participants’ positive reactions

Participants’ written comments indicated the following strong aspects of the current web site:

- Variety of search options
- Speed of finding and displaying the information
  (This notion might be a little biased, because majority of tests were conducted using the high-speed connection to the Internet)
- Relative simplicity of [visible] design
- Use of dropdown menus for selecting or entering search terms
- Use of the Course # field for finding a specific course
- Extensive amount of information displayed in the Search Results table

Participants’ suggestions

This section lists participants’ suggestions regarding what they would like to see changed in the design of the web site. The suggestions are listed in ascending order based on the number of participants that mentioned a suggestion. In cases where the number of participants suggesting the change is the same, the suggestions are sorted by the level of importance, which is based on the facilitator’s observations during usability tests.

- Five participants suggested changing the label of the Course # field and/or making it more prominent
- Three participants suggested making the OR expression on the start page more prominent
- Two participants suggested changing the label of the Subject dropdown menu to Departments
• Two participants suggested allowing search by day, time, and instructor’s name

• Two participants suggested making the View building codes link more prominent
  (One of these two participant suggested linking the building abbreviations in the Building column of the Search Results table directly to the building codes’ page: The test facilitator found it a very good suggestion)

• Two participants suggested allowing course level selection without grouping, i.e. separate level 100 from 200, 300 from 400, etc

• Two participants suggested using different abbreviations for the days of the week, since they found the abbreviations T for Tuesday and H for Thursday confusing, especially when they stood together (TH) in the same table cell

• One participant suggested making the abbreviation legend on the Search Results page more prominent

• One participant noticed that the Semester dropdown menu contained only the Summer I session options, wondered about the Summer II term, and suggested adding the Summer II term to the Semester options

• One participant suggested using the table heading more frequently in the Search Results table

• One participant suggested removing Online from the title of the web site, because that participant’s initial expectation was that the site would list the online courses offered by MSU

• One participant suggested changing the label of the Notes link

• One participant would prefer using a book instead of the web site
Task times and completion
This section of the report contains data reflecting tasks’ timing and successful completion of tasks.

Task descriptions

Task 1: Find customized training courses offered by the College of Business in the fall of 2002.
This task was aimed to determine if participants would notice the No matches found warning.

Task 2: Find the law enforcement course offered off-campus in the summer of 2002.
This task was aimed to determine if participants would be able to locate the Off Campus search option.

Task 3: a) Find the cost of additional materials for the 600-level Sculpture ART course in the fall.
This portion of the task was aimed to determine how easily participants would locate the Note link.
b) Find the full name of the building in which this class will be taught.
This portion of the task was aimed to determine how easily participants would locate the View building codes link.

Task 4: a) Find all open ENG 101 sections offered only on Wednesday and Friday in the fall.
This portion of the task was aimed to determine if participants would see the Closed/Open course status.
b) Find the ENG 101 sections that require a laptop with a wireless card.
This portion of the task was aimed to determine if participants would be confused by the Uses computer assisted instruction note and if they will be willing to look for explanation under the Notes link.

Task 5: Find the prerequisite for the 600-level internship in Economics in the fall of 2002.
This task was aimed to determine how easily participants would locate the information under the pre link.

Task 6: Find the size of the 500-level International Marketing class in the fall of 2002.
This task was aimed at determining how easily participants would find the information in a table row.

Task 7: Find courses that the College of Science, Engineering, and Technology offers off-campus in the fall of 2002.
This task was aimed at determining how easily participants would differentiate between the options in the Campus dropdown menu. The secondary goal was to determine how well participants would cope with the need to combine choices from the College and the Campus dropdown menus.

Task times

<table>
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<tr>
<th>Participant</th>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
<th>Task 4</th>
<th>Task 5</th>
<th>Task 6</th>
<th>Task 7</th>
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</thead>
<tbody>
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<tr>
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<td>1:30</td>
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</tr>
<tr>
<td>Average time</td>
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<td>1:47</td>
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<td>0:47</td>
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Task completion

<table>
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<tr>
<th>Task 1</th>
<th>Task 2</th>
<th>Task 3</th>
<th>Task 4</th>
<th>Task 5</th>
<th>Task 6</th>
<th>Task 7</th>
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<tr>
<td>29%</td>
<td>100%</td>
<td>100%</td>
<td>29%</td>
<td>14%</td>
<td>86%</td>
<td>86%</td>
</tr>
</tbody>
</table>
Findings and recommendations

This section of the reports contains descriptions of usability tasks, what goals these tasks were to achieve, participants’ performance in each task, and recommendations for improvement.

Findings from usability tests

The following conventions were used to describe the severity of problems in cases where the problem situations occurred:

Minor problem: A situation that may confuse users.

Serious problem: A situation that can make users frustrated, although they will be able to find information.

Critical problem: A situation when users won’t be able to find information, a situation that will produce results different from users’ expectations, or a situation that will incur serious academic consequences. (For example, automatically dropping a student from class.)

- **Task 1** was aimed to determine if participants would notice the *No matches found* message when the search returned zero results.

  The tests showed that five participants (71%) could not see the message. All those participants repeated search two or three times and still could not see the message.

  This is a serious problem. It’s recommended to make the *No matches found* message more prominent by increasing the font size, opening it in a new window, or using the JavaScript *alert* function to display it in a popup window that users can’t bypass except by clicking *OK*, which will make them read the message before closing the popup window.

- **Task 2** was aimed to determine if participants would be able to locate the Off Campus search option.

  All seven participants (100%) successfully found this option, although majority of participants were not sure if they would also need to make selection in the College dropdown menu. This indicated that they did not see the OR Boolean expression. Also, most of the participants were confused by the fact that the default option in the Campus dropdown menu was On and Off Campus.

  This is a minor problem. It’s recommended to regroup the layout of dropdown menus on the start page. One option would be to move the College and Campus dropdown menus below the most frequently used selection group and separate them with a horizontal rule. It’s also recommended to move the Course # field to switch places with the Campus dropdown menu: The Course # field is more important than Campus and thus has a higher priority. In addition, it’s recommended to make the On campus selection the default option in the Campus dropdown menu.

- **Task 3** was aimed to determine how easily participants would locate the Notes link in the Search Results table. The secondary goal was to find out if participants would have difficulty finding the View building codes link.

  All seven participants (100%) were able to complete both parts of this task. However, finding the Notes link was one of the tasks that took the longest: The average time was 1:29 for this part of the task. Participants did not see the link, and when they did, they could not associate the label of the link with its contents. All seven participants (100%) were also able to find the View building codes link, although accomplishing this part of the task involved some confusion.

  The first part of this task—locating information under the Notes link—is a serious problem. It can, however, turn into a critical problem, especially if developers intend to put crucial information under the Notes link. It’s recommended to try an alternative label for the Notes link,
to move the Notes link closer to the class ID table cell, or to put only the information that is not critical under that link. It’s also recommended to link building abbreviations in the Search Results table directly to the building codes’ page and to remove the View building codes link.

- **Task 4** was aimed to determine if participants would pay attention to the Closed/Open course status. The secondary goal of this task was to determine if participants would be confused by the Uses computer assisted instruction note, and if they would be willing to look for course requirements under the Notes link.

  The tests showed that five participants (71%) did not see the Closed/Open course status. Also, only two participants (29%) were successful in finding class requirements under the Notes link.

  The first part of the task presents a critical problem: If students do not plan to register immediately but are making up a class schedule, missing the Closed message may throw them off the track. It’s recommended to make Closed bolded in addition to the use of the red font color and to move it closer to the course ID table cell. It’s also recommended to put Uses computer assisted instruction under the Notes link and to create a separate link for class requirements labeled something like req.

- **Task 5** was aimed to determine how easily participants would find the information stored under the pre link.

  Six participants (86%) were not able to complete this task. The biggest problem was that the information stored under that link mostly contains the Instructor permission required message. The most common response from the participants was, “That’s not a prerequisite!”

  This is a serious problem. Most usability testing participants got slightly frustrated and baffled at what they discovered under the pre link, but if the link contains exclusively the course requirement information, the problem will disappear. It’s recommended to create a separate abbreviation for instructor’s permission requirement or to put the Instructor permission required message below the course ID cell in the table. It’s also recommended to change the grouping of the abbreviations’ legend at the top of the Search Results page (put it in a list format) and to move the legend for the pre link from under the View building codes to keep all the abbreviations together.

- **Task 6** was aimed at determining how easily participants would find the information in a table row.

  Six participants (86%) successfully completed this task. Usability tests did not reveal any significant problem.

  There are no recommendations from the test facilitator.

- **Task 7** was aimed at determining how easily participants would differentiate between the options in the Campus dropdown menu. The secondary goal was to determine how well participants would cope with the need to combine choices from the College and the Campus dropdown menus.

  Six participants (86%) did not have any problem accomplishing this task.

  There are no recommendations from the test facilitator.

**Findings from posttest questionnaires**

- Responding to the posttest verbal questionnaire, six participants (86%) did not see the NOTE message on the start page telling them that choosing only the Semester option would take 5 minutes to download the whole schedule.

  This is a serious problem, since most participants indicated that they would be willing to wait between 1 and 10 seconds before the whole schedule downloads.
The posttest written questionnaire also revealed that none of the participants saw the important message telling the ENG 100 and 101 students that they will be automatically dropped from the class if they miss the first class meeting. This is a critical problem because this information is extremely important, especially for freshmen. It’s recommended to make warnings and important messages more prominent.

Responding to the posttest written questions, most participants found the website’s type size and type face appropriate. Majority of participants found labels of the of the dropdown menus somewhat confusing, especially the Subject label. Most participants rated the colors in the Search Results table between unattractive and somewhat attractive.

This is a minor problem. It’s recommended to change the label of the Subject dropdown menu to Departments. It’s also recommended to resort to the expertise of a skilled graphics designer to explore other color matching options for the Search Results table.

None of the participants could remember the correct titles of all dropdown menus. Three participants (43%) chose the word Term to describe the Semester dropdown menu. This is a minor problem. It’s recommended to consider changing the Semester label to Term.

Additional findings

The Help link on the start page opens the e-mail application. This means that the label doesn’t correspond to its contents. This is a critical problem, because it doesn’t meet users’ expectations. It’s recommended to change the label to something like Contact us.

None of the participants saw the abbreviation legend at the top of the Search Results page. Subsequently, in many cases they had to guess what some abbreviations meant. This is a critical problem, because users may miss important information not understanding the meaning of abbreviations. It’s recommended to change the grouping of the abbreviation legend and make it more prominent.

Majority of participants did not see the Course # field until later into a test. This has made some of them quite upset, because searching by a specific course would be quite faster and easier in some cases. This is a serious problem, and it’s recommended to move the Course # field to the left, so that users notice it more easily.

Majority of participants found it frustrating to have selections in dropdown menus return to default when they clicked Back and wanted to change only one or two selection choices. This is a serious problem, and it’s recommended not to make –Select– a default option in dropdown menus.

All participants had problem with the OR Boolean expression. For example, they would choose from both the Subject and the College dropdown menus, when in fact they only needed to choose from either one. This is a serious problem. Instead of using OR, it’s recommended to move the dropdown menus located on the right of the screen (the College dropdown menu and the Course # field) to the location below the main dropdown menus, to separate them with a horizontal rule, and to label the new group with something like Additional search options.

In six of seven tasks, participants did not have to choose Campus. This is a serious problem. It’s recommended to change the grouping of selection dropdown menus to fit the needs of the users. It’s also recommended to make On Campus the default option.
• Many users did not see the Course # field, but they would make a selection from the Campus dropdown menu even when they did not have to do that.
  This is a serious problem. It’s recommended to switch locations of the Campus dropdown menu and the Course # field.

• Some links on the Search Results page open a new window, while others open a new page in the same window.
  This is a serious problem. It’s recommended to use one format—either open a new window or a new page for all links—for the reasons of consistency.

• An asterisk in front of the Semester label does not have reference anywhere on the start page.
  This is a minor problem. It’s recommended to remove the asterisk.

• The Uses computer assisted instruction message for ENG 101 classes in the fall semester should read “computer-assisted.”
  This is a minor problem. It’s recommended to add a hyphen to make the message read Uses computer-assisted instruction.

• The Questions about Registration link opens the Registration Information page.
  This is a minor problem. It’s recommended to change the link label to be the same with the page title, i.e. Registration Information.

• It’s recommended to place the labels at the top of dropdown menus.
  This is not a minor problem, but eliminating it would save horizontal space and would possibly make it easier for users to identify selections.
Appendix A: Demographics questionnaire

Age
☐ 16–19  ☐ 20–30  ☐ 30–40  ☐ over 40

If you are going to college, are you
☐ freshman  ☐ sophomore  ☐ junior  ☐ senior  ☐ graduate

Gender
☐ female  ☐ male

Do you own a computer?
☐ yes  ☐ no

If you own your own computer and access to the Internet, what browser(s) do you use?
☐ IE  ☐ Netscape  ☐ Other: ______________________

What is your level of expertise with the Internet?
☐ novice  ☐ competent  ☐ advanced  ☐ expert

How often are you successful at finding information on the Internet?
☐ rarely  ☐ occasionally  ☐ usually  ☐ always

Have you visited the MSU Online Course Listing web site before?
☐ yes  ☐ no

What information do you expect to find on the MSU Online Course Listing web site?

Why would you need this information?
Appendix B: Usability tasks

Thank you for participating in the usability testing of the MSU Online Course Listing web site. Please, remember that this is the test of the web development team, not you. You cannot do wrong or fail during the usability testing.

Please read the usability testing instructions carefully before the usability testing begins.

1. On a signal, start performing a task.
2. Think aloud.
   Describe your actions and make comments while working on a task. We are extremely interested in your comments—both positive and negative.
3. When you think that you have completed a task, or if you think that a task cannot be completed, please say so.
4. Wait for a signal to proceed to the next task.

Task 1
Find customized training courses offered by the College of Business in the fall of 2002.

Task 2
Find the law enforcement course offered off-campus in the summer of 2002.

Task 3
Find the cost of additional materials for the 600-level Sculpture (ART) course in the fall.
Find the full name of the building in which this class will be taught.

Task 4
Find all open ENG 101 sections offered only on Wednesday and Friday in the fall.
Find the ENG 101 sections that require a laptop with a wireless card.

Task 5
Find the prerequisite for the 600-level internship in Economics in the fall of 2002.

Task 6
Find the size of the 500-level International Marketing class in the fall of 2002.

Task 7
Find courses that the College of Science, Engineering, and Technology offers off-campus in the fall of 2002.
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Usability tasks (cont’d)

1. What did you like about the MSU Online Course Listing web site?

2. What would you change or add to the design of this web site?

3. Did you find the font size:
   - □ very small
   - □ somewhat small
   - □ small
   - □ easy to read
   - □ somewhat large
   - □ large
   - □ too large

   type:
   - □ too fancy
   - □ easy to read
   - □ too plain

4. Did you find the names of the dropdown (selection) menus:
   - □ confusing
   - □ somewhat confusing
   - □ easy to understand

5. Did you find the colors of the Search Results table:
   - □ unattractive
   - □ somewhat attractive
   - □ attractive
   - □ very attractive
Appendix C: Posttest questionnaire

How long do you think it would take to download (display) the entire semester schedule?
(This question was aimed to determine if participants read the Note on the website’s start page.)

Can you remember titles/names of any dropdown (selection) menus?
(This question was aimed to determine alternative labels for dropdown menus.)

Do you know what will happen if you miss the first class meeting of ENG 101?
(This question was aimed to determine if participant saw the important note that appears in the beginning of the Search Results table for ENG 100–101 selection, which says that students would be automatically dropped from the course.)

What is the color of a subject row in the Search Results table?
(This question was aimed to determine if participants have associated the selection in the Subject dropdown menu with the subject row in the Search Results table, and also to find out how the color of the subject row helped that row stand out from other rows in the table.)