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I N F O R M A T I O N   A R C H I T E C T U R E: About Doing Usability Testing

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User/Design Researcher / Information Architect Specialist
User Experience Designer

Doing Usability Testing

If you develop Websites, you need to be doing usability testing. It is that simple.

When you write a program using your favorite language, do you expect the program to work correctly the first time? No, none of us do. We all know the importance of testing our software as we develop it.

Your Web interface needs testing as well. Web developers and graphic designers, while talented, aren't like the general population. We think different. We have an entirely different vocabulary. Designing systems that make sense to code warriors will often lead to a site that is not usable by the average person.

This tutorial will teach you how to conduct a simple usability test on your Website (using the hands-on task based method). While the method explained here is not comprehensive, the return on investment is very steep. Consider the wise words of a well-known usability expert:

"It takes only five users to uncover 80 percent of high-level usability problems." Jakob Nielsen

INFORMATION ARCHITECTURE: About Doing Usability Testing

Information Architect & Design Experience

Plan the Usability Test

1. Know the Goals of the Usability Test
The primary point of usability testing is to provide feedback during the design/development process to ensure that the Website will actually be easy and effective to use and provide valuable information to the users. Four primary elements to measure are:

Ease and effectiveness of navigation—Do users find what they need easily. Is there a clear pattern to the navigation that fits easily into the users mental model? Are you links labeled with terms that make sense to your users? (Or, are you speaking in your own private jargon!)

Usefulness of content—What information do your users want/need? Have you organized the content on each page in such a way that it is easy for your users to quickly find it? Or do they have to read all the fine print while standing on their heads?

Effectiveness of presentation—Did the graphic design, fonts and colors highlight the navigation and content, making the site easier to use? Or did the presentation distract or create a barrier between the user and the information?

Task success rate—Were the users able to accomplish the key task they needed/wanted to accomplish. If they were able to complete the task, did they feel satisfied, or angry and frustrated?

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2. Determine Usability Testing Timeframe

Meet with the clients who are requesting the usability testing as well as the developers who are designing the site. Ask the client when they hope to have the site live. Ask the developers when they hope to have the system available for usability testing. Request at least 4-8 weeks between the Usability Testing dates and the "Go Live" Date.

Example of an absolute minimum timeframe:

Week 1
Determine usability goals, timeframe, audience, recruiting plan
Review Website with clients/developers, develop usability test instruments

Week 2
Recruit test subjects
Test the test; make adjustments to test or Web interface

Week 3
Conduct the tests and gather testing data

Week 4
Compile data and draft a report, review report with all test facilitators for consensus, produce final report
Present the final report to clients and developers. Clients/developers decide what recommendations they will address.

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3. Determine the Target Audience & Test Subject Recruitment Plan

Ask the client who the primary audiences are for this Website. Try and keep the audience focus down to 2-5 audience types. After the primary audience(s) have been named, considering setting a goal of 3-5 representative test subjects for each primary audience type. For example, when testing the _____ home page we had 14 test subjects. See Jakob Nielsen's article on why testing 20 users is enough.

3 _____/_____
3 _____
3 _____
3 _____
2 _____ with Visual Disabilities

Identify possible test subjects, gather their contact information, and establish the week(s) that you will be conducting your testing, schedule locations for the testing, double check with your clients, developers and test facilitators that the testing week(s) are realistic.

Consider offering an incentive for people to participate in the usability test. Common incentives are free lunch or gift certificates. For students, we often order pizza and soda. We have also used $20 gift certificates to local bookstores, music stores or _____ related stores. Incentives greatly improve attendance. When we have used incentives, we have reliably had 100% attendance in our test subjects.

Here is an example of a testing grid. Include: Date, Location, Test Time, Target Group, Facilitator, Note Taker Test Subjects (write it out on a matrix).

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4. Develop the Usability Test Documents

There are four basic documents used for hands-on task based usability testing.
These documents are:

Waiver
Entrance Questions
Task Based Questions (the heart of the hands-on usability test)

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5. Exit Questions

Let's look at the purpose of these documents and see a sample of each.

Waiver: Each test subject should sign a waiver or consent form, indicating that they are giving permission for you to take notes (or video/audio tape) them during the testing. Sample Waiver.

Entrance Questions: These documents help you collect demographic information that you can later use when analyzing your results. Questions include name, age, gender, Internet experience and target audience group. Sample Entrance Questions might be:

Task Based Questions: The heart of hands-on usability testing is the Task Based Questionnaire. During the test, the subject is sitting in front of a computer with the appropriate starting page on the browser. The facilitator verbally leads the test subject through a series of questions/tasks, encouraging them to think out loud. The facilitator does NOT lead the subject to the answer. Sample Task Based Questions.

Exit Questions: At the end of the testing session, you will want to allow at least 10 minutes for your test subject(s) to give you their opinion of the site. How easy was it to navigate the site? What did you like or dislike? What was confusing?

Feel free to use the samples above as your template, making changes as needed to adjust to your specific testing needs. The document that will require the most work will be your Task Based Questions. Here are some pointers on how to write your task-based questions:

Key Pieces of Info: Think about your site. What key pieces of information will people need to find on your site? Consider writing a task/question for each of your key pieces of information.

Top Ten: Have too many key pieces of information, and then test for the "Top Ten" things people need to get from your Website.

Audience Versions: Don't hesitate to write a slightly different version of your Task Based Questions for each of your target audiences. Different target audiences have different needs on your site. When I create different versions, I usually have a core group of questions that work for all my audiences (perhaps 60-70% of the questions) with a few more audience specific questions.

Non-leading Questions: When writing the text of the question, make sure you are NOT leading your test subject to the answer. Use common vocabulary and specifically avoid the vocabulary that you are using in your hot links and buttons. For example, if I wanted to test the ease of finding the "Campus and Parking Maps" and the link text was "Campus and Parking Maps", I might word the question like this, "You are planning on taking your friend to the _____ this weekend and you need to find out where you can park."

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Simple: The task/question should be simple, so the test subject can keep it in their mind without reading it. Try to write the task in the vocabulary of the target audience.

Realistic Scenarios: The Task/Questions should be realistic scenarios that your target audience would really experience. The point of the test is to simulate being "the fly on the wall" while a real person is using your site.

6. Conduct the Usability Test

Pre-test preparations: You've developed your Usability Test, scheduled your test subjects and now you are ready to go, right? Before you bring in your first test subject, you have three important quality checks.

1) Test the Usability Test: Sit down at your computer with the usability test in hand, read the questions to yourself, and attempt to do all the tasks. Does the test work for you? Or are parts of the Website not ready for prime time yet? Share the Usability Test with your Website developers so they know what sections of the site you are testing. Make sure that the site will be stable and ready during the dates you are conducting the usability test.

The site doesn't need to be perfect, or finished. Just make sure your questions/tasks are actually doable, and not just a dead end.

2) Practice Giving the Test: Grab an unsuspecting co-worker or friend and conduct the entire usability test on them. This will help you feel more comfortable when you do the test on your first real test subject. Have your friend/co-worker complete all the paper work (waiver, entrance and exit questions). As you read the task-based questions aloud, remember not to lead them to the answer. Encourage them to talk out loud (with some folks you will need to encourage them to do this on every question).

Remind them over and over, that you are not testing them, but you are testing the software. If they have problems completing the tasks, their complaints and frustrations (voiced aloud) will help you convince the developers that things need to be changed.

Tell them you want them to be brutally honest. You had nothing to do with the design of the system and want them to tell you exactly what they are thinking. If they think the site "stinks" or they are ready to pull their hair out, you want them to tell you!

As they give you feedback, both negative and positive, tell them "that is a good point" and write down what they say. Show approval and appreciation for their comments.

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3) Supply Checklist: Make sure you have everything you need to conduct each test. Your checklist might look something like this:

> Waiver
> Entrance Questions
> Task Based Questions
> Exit Questions
> Computer with Internet connection and all required plug-ins
> URL of working Website
> Token of appreciation—food or gift certificate
> Pen(s)

I like to create a Web page that has copies of all the usability testing documents online as well as a link to the site. Then, if I have forgotten anything, I can grab a copy online and print it out wherever I am.

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7. Testing Methodology

Okay, now we are ready to conduct the test.

1) Welcome: Welcome the test subject and thank them for coming. Make them feel at ease. Tell a joke, or talk about the weather. Ask if they have ever been in a usability study before. Assure them that it is fun and easy.

2) Agenda: The main things you will be doing during the usability study. For example, you could say:

First, I will have you sign a waiver that indicates your willingness to participate in this usability study and let's you know that I'll be taking notes of your comments, but will keep all your personal information private.
Second, I will ask you some basic demographic questions.

Third, I will ask you to complete X number of tasks on the new Website. Keep in mind that we aren't testing you, but we are testing the Website. Any problems or frustrations you encounter will help us see where the design needs to be changed.

Fourth, I will ask you for your general feedback on the site. We want to know your opinion.

This process should take about an hour, so let's get started. (Note: It is important to end the test on time. You need to be respectful of the person's time, especially if you want to get honest answers.)

3) Waiver/Entrance Questions: Have the person complete the waiver. Answer any questions they have. Have the person complete the demographic/entrance questions. You can either have them complete the form on paper, or ask them the questions out loud and fill it in for them. Whichever works best for you?

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4) Task Based Questions: Have a computer ready with the browser open and sitting on the starting page of your Website. As the test facilitator, you will instruct and observe the subjects performing fairly simple, common tasks. You will verbally lead them through the series of tasks/questions, encouraging them to think out loud and respond to what they are looking at. You will ask questions about their thought processes and their decisions as they work, without being intrusive or leading. You will also take in-depth notes directly on the Task Based Questionnaire. Things "To Do" and Things "Not to Do" while facilitating the test:

Things To Do	Things Not to Do
Listen carefully	Fail to listen
Encourage	Criticize
Be neutral	Be defensive
Speak English	Speak Geek
Ask: What would you do?	Lead user to answer
Be patient	Be impatience, rush

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As you ask each question aloud, try to use the exact words on the test. Do not lead the user to the answer. Do not help the user answer the question. Remind the user we are testing that software, not them. Encourage them to think out loud.

> "What words are going through your mind?"

> "What are you looking for?"

Make note of the click stream (the path the users follows to complete the task). Note any of the users comments and suggestions for making the task easier. Finally, indicate if the person was able to successful complete the task, as well as your opinion of their satisfaction or frustration level.

Remember, someone will have to transcribe these notes. So try to write legible and capture what you are observing.

5) Exit Questions: When users are finished going through the set of task-based questions, hand them the exit questions and ask them to answer them. Then give them a few minutes to talk informally about their usability experience with you. Ask them what they liked/disliked about the site most, if they have suggestions for improvements, etc. If they've done or mentioned anything during the test itself that you want to ask further questions about, now is the time to ask. In my experience, users are only too happy to talk with you when the test is over!

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8. The Final Report—Usability Findings & Recommendations

Now it is time to compile your usability data, analyze it and write your recommendations. I recommend entering all of your entrance, exit and task information into an excel spreadsheet.

Look for trends in comments and task completion. Document the impact the data shows on effectiveness, efficiency, time on tasks, errors and satisfaction. Group your recommendations in severity/priority order.

> 1st Priority—must be fixed, brick wall;
> 2nd Priority—would be good to fix, but can wait;
> 3rd Priority—okay as is, could be improved.

Don't just critique and point out what is wrong. Suggest a solution or remedy for each problem. Your suggestions could be a change in the design or the content.

If you sense that the application owners/developers will be resistant to suggestions, consider sharing the usability recommendations with them individually and in draft form, then when it comes to the formal meeting where you review the recommendations, there are no surprises.

Another key to helping developers/designers truly understand the usability issues is to actually let them observe the usability testing process. This works best when the develop/designer is behind a one-way mirror (so when they scream and cry and state that "any idiot would know what to do", your innocent test subject won't have to be intimidated by them)! Since most offices don't have usability testing rooms with one-way mirrors, other methods for letting them see include:

> Audio recording the sessions and letting them listen;
> Video taping the sessions and letting them watch;
> Live Webcast the sessions and let them watch from another room.

Make sure your test facilitator/note takers are people that your developers/designers will always believe.
In the rarest of cases, allow your develop/designer in the room while testing.

In my experience, I've yet to make use of the audio recording or videotaping we've done. I now just pick well-trusted facilitators and note takers and pre-review my recommendations with the designers/developers before making formal recommendations.

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9. Purpose of Usability Test Date of Test

The purpose of our test sessions was to gauge the usability and ease of navigation of the Blanton iTour interactive museum guide for specific target audiences, namely students and general museum visitors.

During the week of _____ __ — _____ __, ____, we tested the new site with 8 members of the ___ community pulled from the defined audience groups. We administered an entrance and exit survey before and after each test, and asked users to sign a release form giving their permission for notes to be taken and used for data-gathering purposes. One facilitator led each session, which included one participant and an optional note taker. Users were asked to complete 10 tasks read aloud to them by the facilitator.

Our goals were to determine what is or is not working successfully on the iTour museum guide from the users' perspective. We looked for information such as:

>   Do users complete each task successfully?
>   If so, how fast do they perform each task?
>   Is that fast enough to satisfy them?
>   What paths do they take in trying?
>   Do those paths seem efficient to them?
>   Where do they stumble? What problems do they have? Where do they get confused?
>   What words or paths are they looking for which are not on the site?

After each session, we included an open-ended general discussion period where users could share their thoughts on any aspect of the site or testing with us.

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10. Description of Methodology

Think-Aloud Protocol

We employed a task-based think-aloud protocol, in which we asked users to communicate their thought processes verbally while they worked. We asked them to vocalize what path they took to find information, what questions they had, and what surprised or confused them as they went through the site. We kept questions open-ended and neutral, such as "What do you mean by that?" or "What did you expect to happen?" When users identified a problem, we asked them how *they* would fix it. We observed body language and facial expressions as well.

Test Environments
All users used an iPAQ 3670 running Pocket PC 2002.

Demographics

Status	PDA Experience	Age Group	Frequency Visiting Museums Yearly	Museum Experiences Preferred
Student	Proficient	18-24	3-6	Hands-on, audio, visual.
Student	Minimal	18-24	Rarely	Self-guided.
Student	None	18-24	Rarely	Self-guided; avoids Audioguides b/c of Expense.
Student	None	18-24	3-6	Self-guided; also likes Acoustiguides occasionally.
Docent	None	55+	6+	Recently use audio guides, if have enough time and can control what I'm listening to.
Docent	None	55+	6+	Self-guided or docent led tours, have used SFMOMA computers, and Denver Art Museum.
Docent	None	55+	6+	Likes Acoustiguides, especially newer versions, which allow one's own path through an exhibit.
General Public	None	25-34	3-6	Self-guided; also likes Acoustiguides occasionally.

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11. Strengths and Weaknesses

Strengths

Overall, users felt the **iTour was easy to use and would could enhance a museum visit**. They greatly appreciated the opportunity to **hear the artist talk** about their work and were enthused about the **possibilities for future interpretations**. Specifically, users said:

- I really like this. I would definitely go to the museum if I had this type of interactive choice. Would be great for youngsters. Extremely the way to go.
- Surprised that this device really would be appropriate in the sacred museum space.
- Would need places to sit down in the museum so you could enjoy this more.
- Would allow me to sift down to what interests me most and help me find additional resources.

Weaknesses

Users provided wonderful feedback for improving the iTour. The following items are outside the scope of this pilot, but should definitely be remedy on any future iTour versions.

- Some users didn't know how to tap on the screen. First they would tap tentatively. Then, they might press too hard.
- Some users were frustrated by the keyhole navigation. They wanted navigation that was more obvious to allow them to get to information for each work of art.
- A few users felt that the label content wasn't written for a general audience.
- A number of users commented that the font size was too small.
- Not easy to scan or read some of the screens that are mostly text. Need more white space and text chunking for easy scanning.

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12. Conclusion: High Priority iTour (Observations/Suggestions) Recommendations

Items in this section can significantly improve the usability of the iTour.

Back Button More Intuitive—Observations/Suggestions: Novice computer users did not find the back button to be obvious. Suggested solutions:
- Add the text "Back" to the Back Button.
- Make the "hit area" larger.
- Remove all "previous screen links" because they are redundant.
- Make the back button just go back to the true previous screen.

Home Button More Intuitive—Observations/Suggestions: Users in general did not understand that the "Blanton B" was the "Home" button. Suggested solutions:
- Add the word "home" to Blanton B button.
- Add the words "About iTour" near Blanton B on 1st page.

Links Easier to Tap—Observations/Suggestions: A significant number of users consistently tapped on the "orange dots" in front of the links, rather than on the words. Suggested solution:
- Make sure the tap area includes the orange dots.

Scroll Bar More Responsive—Observations/Suggestions: Users expected that tapping on the scroll bar would move down a "whole page". And that tapping on the arrow would move down more than 3 lines. Suggested solution:
- When you tap in the bar make the screen scroll a whole "page". When you tap on an arrow, scroll 5 lines.

Video More Intuitive—Observations/Suggestions: Users expressed surprise and/or frustration when videos looped, or when a video started playing unexpectedly. Users were also overwhelmed by the number of audio/video available for some artists. Suggestions:
- Videos are looping (automatically playing twice). Videos should only play thru once.
- Don't automatically start playing any videos anywhere. Don't surprise the user with a video.
- Video/Audio clips should not be repeatedly accessible in any area. For example, the Radcliffe audio clips associated with the interact piece, should only be accessible in the interact piece.
- Order of video clips should be from broad/background topics to deeper topics.
- Organize for ease of learning for a visitor.

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Volume Slider More Responsive—Observations/Suggestions: Users consistently had trouble using the volume slider. Suggested solutions:
- Volume slider is hard to move. Make the target area larger.
- Once volume is turned all the way up, it is hard to turn it back down.
- Make the target area larger.
- Make sure volume is reset to medium when unit is "reset" for next guest.
- Volume slide not obvious to inexperienced users. Add a "+" on top of the top speaker picture and a "-" on the bottom speaker picture. Make it so when you tap on the "+" speaker the volume moves up "X"…and vice versa for the "-" speaker.
- Add the word "volume" near the volume controller.

Kim Interact—Observations/Suggestions: The video stopped some users from ever getting to the create activity. Some users were surprised by the video and never saw the link that would take them to the create activity. The video didn't add significant value. Suggestions:
- Remove Byron Kim video from the interact section.
- Go directly to the "pick your skin color" page.
- Add instructions.

Bailey Interact—Observations/Suggestions: The video stopped some users from ever getting to the create activity. Some users were surprised by the video and never saw the link that would take them to the create activity. The video didn't add significant value. Users had problems stopping and audio clip and getting back to the selection screen for the interact activity. Suggestions:
- Once an audio clip is playing, add the ability to stop that audio clip and select another audio clip (or leave the page).
- Add instructions on the Bailey Interact Page.
- Remove Bailey video from interact. Go directly to the interact activity.

Amado Create—Observations/Suggestions: Some users had a problem submitting their poetry. On the "Add Word" screen, it is too easy to hit "Return to Poetry" and lose your word! Suggestions:
- Fix the bug that allows words to stick to the stylus or the submit button, making it impossible to submit.
- Review the design of the "Add Word" screen so that users won't lose a word.

Additional Resources—Suggestions: Users consistently commented that the Bibliography was not useful in this setting. Suggestions:
- Remove bibliography, not useful in this setting.
- Add map to resources in back of museum, with list of resources available.

Page Title—Suggestions: Page titles are not consistent. Suggestion:
- Review titles at top of each page. Make sure they are intuitive and accurate.

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Second Priority iTour—Recommendations: (These recommendations do not greatly enhance the usability of the iTour for this pilot. They can be considered if there is time, otherwise they should be reviewed prior to any future iTour projects).

- Add something on home page to connect all the pieces in the iTour with the exhibit theme.
- Make circles on Home page larger.
- Make the circles on Home page easier to identify with each artwork.
- Make the Bailey Keyhole more obvious. Perhaps use the red gourd or the woman's face.
- Create multiple versions for multiple audience types (age groups, art experts).
- Ask 4-5 simple questions to help tailor the experience for each visitor.
- Add information from curators.
- Font is small.
- Text Titles-Add titles to chunks of text to identify them and make them more readable.
- Make chunks of text more scannable. Add white space in "text intense" places.
- Add help link/mini tutorial at the beginning
- Closure. Add a piece that would allow for closure, good-bye, I know I'm done.
- Bookmarks. Add the ability to bookmark pieces and do further in-depth research later.
- Top Navigation (all screens except Home) Make the main navigation for each artist available from every page for that arts. Add a "Learn", "Interact/Create", and "FAQ" link to the top of every page.
- Keyboard Enhancement—Some users didn't realize that "Del" stood for "Delete". Change the "Del" key to read "Delete".
- Add the year the artist was born on each "About the Artist" page.