Applying Usability to eLearning

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About Fredrickson Communications

• Award-winning, woman-owned C-Corporation
• Based in Minneapolis, established in 1985
• We empower our clients and their audiences by helping them learn, share knowledge, and discover information
• Expertise in instructional design, information design, user interface design, information architecture, usability analysis, programming, and project management
• Outstanding reputation for service
What is Usability?

• "[Usability refers to] the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context." - ISO 9241-11

• Five attributes associated with usability:
  1. Learnability
  2. Efficiency
  3. Memorability
  4. Lack of errors
  5. Satisfaction
Evaluating Usability

1. Usability testing
   - Representative users attempting tasks
   - “Think aloud” protocol
   - Observed, recorded by analysts
   - Quantitative and qualitative data

2. Heuristic evaluation
   - 2-4 usability analysts independently inspect an interface
How Usability Testing Works

- Test sessions involve one participant at a time working through a set of task scenarios – usually 5-8
- Task scenarios are chosen based on how common or critical they are
- Tester may be asked pre- and post-scenario questions
- Tasks and questions are all documented in a test plan developed well in advance of the test sessions
Where it Happens
How Many Testers to Include

- You can capture many key issues with as few as 5-6 test participants.
- Your chances of capturing virtually all of the key issues increases with 10-15 test participants.
- Per user group
- Testing with a few is better than testing with none
- Testing remotely is better than not testing at all
- Diminishing returns after 10-15 participants
But Remember ...

- It’s not just the number of testers.
- It’s also the number of tasks.
- 12 testers doing 3 tasks probably won’t uncover as many issues as 6 testers doing 6 tasks.
When to Test

- Test in the Design Phase, if possible (mockups, prototypes)
- It takes longer and costs more to make changes later in the process
- Gilb’s ratio – 1:10:100

Figure 1. The number of possible designs decreases as the cost to make changes increases. (Bass & Mayhew, 1994, p. 80)
Usability Test Data

• Quantitative data
  – Tester success/failure rate with each task
  – Tester task ratings
  – Navigation paths (how many clicks?)
  – Error rate
  – Time on task
  – Tester ratings of look and feel, ease of navigating, overall ease of use
• Tester comments, questions – verbal feedback
• Tester gestures and expressions – non-verbal feedback
  – “This [Add Row] thing to me makes absolutely no sense. I’ve got a button that says “Add Row,” but for what? I’m trying to report an absence.”
  – “How does the [Add Row] button add value for me as a user?”
  – “I don’t see where I would put in hours, part of a day. I have yet to see where I can enter that. I don’t know what direction to go in next.”
The Usability Testing Process

1. Create the test plan
2. Recruit and schedule test participants
3. Conduct test sessions
4. Compile results, prepare report, and hold review meeting
5. Act on the results – develop a plan.

Have a neutral, third-party, experienced analyst conduct testing – they are outside the politics, understand the process and how to conduct a test, and they know UI design standards.
Usability and eLearning

• eLearning courses and modules are often *not* subject to usability testing
• The objective of usability evaluation is not to make the course material itself easier, but instead to make the technology and design invisible to the extent possible so that they do not interfere with the learner’s experience.
• The learner should be focused on the content, not on the technology delivering the content.
Usability Heuristics (Guidelines)

• For Jakob Nielsen’s list see: www.useit.com/papers/heuristic/heuristic_list.html
• See ISO usability heuristics at: www.userfocus.co.uk/articles/expertreviews.html
Provide User Control

• Does the user feel in control of their interactions with the interface, or do they feel like the interface is in control of them?

• Does the user know where they are and how they got there? Can they get back to where they came from? Can they exit from an unwanted state, or undo an action made in error? Can they initiate and control multimedia elements?
Provide User Control

What are Bloodborne Pathogens?

- Human Immunodeficiency Virus (HIV)
- Hepatitis B (HBV)
- Hepatitis C (HCV)
Provide User Control

NOTE:
The business ethics online training course is comprised of two segments: the Everyday Ethics lesson and the Application module. Both include Ethics policy information that every team member must know and review periodically to be in compliance with policy and external legal regulations.

You are required to complete BOTH segments of the Business Ethics training each time you take the course, and are responsible for the content of both, regardless of your role or length of time with the company. You may not skip any portion of either lesson.
Is User Control Always the Right Choice?

- Although all learners say they prefer to have control, novices in a subject area do not typically perform as well when they are given the freedom to go through a course however they want.
- For courses where the audience is novice and high levels of skill attainment are critical, you should design navigational control and other course components to ensure that critical course components are not skipped by learners.

When to Provide User Control

• Learners have prior knowledge or a base of expertise related to the training content
• The course is more advanced, or the subject is in a more advanced portion of the course
• Learners are good at evaluating their own learning needs
• The course is not complex
• The goal is primarily to provide information rather than to build skills
Minimize the User’s Cognitive Load

• Cognitive load refers to the level of effort associated with thinking and reasoning (including perception, memory, language, etc.).
• A UI should minimize the cognitive load associated with operating the interface itself so that all of a person's cognitive resources are available for their task – e.g., achieving the learning objectives.
• Minimize the user's cognitive load by making objects, actions, and options clearly visible – ensure there is good contrast, good font size, clear labels for links and buttons, and check that animations and other dynamic displays don’t other cover up important content.
Also, see the Color Contrast Analyzer at http://juicystudio.com/services/colourcontrast.php
Text, Audio and Cognitive Load

- **Graphics & Text.** Use both graphics and text to communicate content.

- **Audio Narration.** Where audio is an option, present content with audio narration and graphics rather than using just text and graphics to present information.

- **Audio & Text Narration.** Where audio narration is used, do not present words as both audio narration and onscreen text when there are graphics on the screen.
Claire – Hey, I saw something about that on the news this morning before coming to work. Is that the Avian flu they are seeing spread over in Asia? Why are we watching for it here?
Be Consistent and Follow Standards

• Users should not have to wonder whether the same words, situations, icons, objects, actions, etc mean the same thing in different places. Follow conventions.

• Follow your organization’s style guide (develop one if you don’t have one), so that all your eLearning products have a similar look and feel and follow the same conventions.

http://www.usability.gov/pdfs/guidelines.html
Use a Minimalist Design Aesthetic

• Dialogues should not contain information that is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility, adding to the user’s cognitive load.

• Do not add irrelevant or non-essential graphics, video, animations, stories, music, or lengthy text in an attempt to arouse a learner’s interest in a topic.
Learning Objectives

After this course, you should be able to:

- Define the four components of development planning and describe how they correspond with the sections in the DP form.
- Explain how business, performance, and development goals differ and how they intersect.
- Describe why the development planning process is important for all Medtronic employees.
- Identify the four types of information that you'll use to assess your individual development needs for the DP and explain how you will collect that information.
- Recognize and write good, strategic development goals and actions for a DP.
- List several types of development activities and development resources.
- Identify potential obstacles to the implementation of a development plan and describe strategies to overcome obstacles.
Additional Resources

- Driscoll, Margaret and Saul Carliner. *Advanced Web-Based Training: Adapting Real World Strategies in Your Online Learning*. 2005
- eLearning Guild Research Reports
  [www.elearningguild.com/content.cfm?selection=doc.1](http://www.elearningguild.com/content.cfm?selection=doc.1)
- More resources in the Showcase section of our website at [www.fredcomm.com](http://www.fredcomm.com)
Questions, Comments