Web Technologies for Instructional Designers: Supplementary Instruction for R541

Design Report

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Instructional objectives

The analysis phase of this project established a need for instruction based upon anecdotal and survey evidence. Among the survey findings:

- The uses for Flash rated most valuable, and for which respondents felt the least able to create were animation, interactive quizzes, game-like activities, and simulations.
- The Flash tasks that were found most difficult were scripting, sound timing, animation, and controlling playback.
- The HTML/CSS tasks found most difficult were alignment and embedding media objects.

Considering this data in combination with the technical requirements of R541 will provide the focus for the instruction to be designed. The final project for R541 includes these requirements (from R541 Spring 07):

- Creation of a web-based lesson
- Inclusion of at least one animation or interactive graphic
    - If an animation, at least stop and start controls; pause or stepwise controls preferred
    - If an interactive graphic, at least four interactions
- Inclusion of either one audio segment or one video segment

The following instructional objectives were formulated from the intersection of learners' felt needs and the above requirements.

At the end of this instruction, learners will be able to:

- Create a Web page with customized text and layout in a WYSIWYG editor such that its appearance is substantially consistent among "modern" Web browsers (Firefox, IE7, Opera 7, Safari 2+).
- Embed a media object (Flash, audio, or video) in a Web page so that it plays as expected.
- Create an animation in Flash with functional stop, start, pause, and skip controls.
- Create a usable interactive graphic in Flash with drag-and-drop and incremental change functions.
- Import audio and video into Flash, encoded for acceptable quality and appropriate download times.
- Control the timing and playback of imported audio and video in Flash, such that audio syncs properly with visual elements, and both audio and video respond to stop, start, pause, and skip controls.

Motivational Factors

The instruction has features that should be inherently motivating for students in R541. Their attention should be captured by the promise of technical aid for tasks necessary to the R541 final project. The relevance is immediately apparent. Confidence should come from completing the example tasks. And students will get ultimate satisfaction from using the skills in their own projects.

Setting

The instruction will be delivered by Web, on a publicly accessible server. It is expected that the instructor(s) of R541 will make the supplementary instruction known to their students in some fashion (e.g., by linking to the supplement from the class Web site).

Activities and sequencing

Lessons will be ordered in learning-related sequencing, progressing from identifiable prerequisites to tasks of greater difficulty and less familiarity. These are the lessons that will cover the instructional objectives:

Lessons in Flash

- Using symbols in Flash (creation of and hierarchical re-use of symbols)
- Animating in Flash (frames, keyframes, tweens, frame actions [play, pause, stop, skip to])
- Importing external media in Flash (encoding, timing, playback control)
- Interactive graphic creation (drag and drop, state changes [on/off, incremental])

Lessons in HTML/CSS

- Common pitfalls in HTML/CSS (nesting errors, empty tags, basic use of validators to find errors)
- Embedding media objects in HTML

In addition to the lessons in Flash, the instruction will include a brief overview of the tools and workspace of Flash, with links to the articles in Flash Help that detail their use. The aim of the workspace overview is to allow learners who have never used Flash a way to quickly gain some familiarity, while not covering material that is adequately described in the application documentation.

Similarly, the lessons in HTML/CSS will be preceded by a link for absolute novices to the *HTML Dog* "HTML Beginner Tutorial": http://htmldog.com/guides/htmlbeginner/. Students in R541 are expected to use Dreamweaver to produce their Web pages. As Dreamweaver is a WYSIWYG HTML editor, it is not necessary (though it may be preferable) for students to understand HTML coding. The instruction will therefore focus on the most problematic areas of HTML (as identified by the needs assessment). Those students who wish to get a better grasp of HTML fundamentals will be able to do so using the HTML Dog resource, which is of excellent quality.

As the instruction is intended to be self-directed, the lessons will be accessible from an index page, so learners can use the lessons as they choose. Allowing learners to skip around in the lessons may lead to more fragmented learning, but not allowing them to do so risks frustrating those who will want to get straight to certain answers. Frustrated learners may abandon the instruction altogether, so the designer chooses the lesser of the two evils in this case, hoping to ensure that the instruction gets used.

Individual lesson material will follow learning-relating sequencing schemes, similar to the sequencing of the lessons—identifiable prerequisite, difficulty, and familiarity.

Activities will consist of hands-on creation of example products, guided by task walkthroughs.

Instructional strategies

The lessons will primarily use a direct instruction strategy. Given that the main focus of the instruction is on technical skills, not creativity or original problem solving, learners will be hoping to get answers as quickly as possible from the instruction. Lessons will begin with a structured overview and move into explicit teaching of technical terms and task procedures.

The structured overviews for the lessons will consist of simple concept maps illustrating the relationships between concepts to be taught, and, when appropriate, concepts taught in previous lessons. This organizational strategy should help learners by preparing them for the scope and showing the main points of the lesson.

The explicit teaching of terms will consist of text paired with images (screenshots) when appropriate. For procedural learning, the instruction will use a rule-eg strategy, for the most part. Instruction will state a rule, then show or instruct learners to create examples illustrating the principle. This strategy should suit learners who are eager to get to practical knowledge.