Quality Educational Design of San Diego
A hypothetical corporation

Design Concept

Faculty Web Mentor™

Prepared by Christopher Lepine for

Gabriel Ozgood,
President and Chief Creative Officer
QED

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1.0 Overview

Tens of thousands of higher education faculty in the US feel a great need to publish web pages. The Faculty Web Mentor™ (FWM) will help them learn to create, publish, and manage these files. Since the product design matches the goals and educational context of the learners, FWM should be quite effective.

1.1 Goal and Strategy

The Initial Analysis revealed that learners have strong motivations for web publishing. By supporting key learner goals, the strategy of the FWM is to bring faculty *immediate* satisfaction and success. It will teach them rudimentary web publishing with familiar tools – MS Word and Windows Explorer. The key instructional goal is that faculty WBAT author and share the most *basic* HTML pages via the Web.

1.2 Constraints and Enablers

Most faculty face challenges to using FWM. They have little extra time, multiple demands, and often, learning distractions and computers buried under office debris. They tend to be uncertain, self-conscious computer novices who have difficulty troubleshooting. Moreover, their equipment and bandwidth at work and home varies widely.

However, faculty are strongly motivated to learn basic Web publishing. Happily, most institutions have good bandwidth and equipment with current browsers with the FLASH and PDF plug-ins. In addition, the proposed FWM will follow CBT guidelines that stress smaller information chunks, ample and frequent practice, multiple sensory channels, and media (Clark, 1999; Clark and Mayer, 2003). This makes the FWM design feasible and very effective.

1.3 Product Delivery Components

As seen in Figure 1 (page 2), instruction will be delivered in a variety of common readable formats integrated through the Internet Explorer 5.0, Mozilla 1.4, or Firefox 1.0 or higher browsers. Although all instructional materials will be delivered via the Web channel, CD-ROMs and booklets will be offered to reach users with bandwidth or access problems and to provide QED with additional marketable products that easily repurpose the core Web content. This will enable QED to pursue both a purchase and ASP approach.

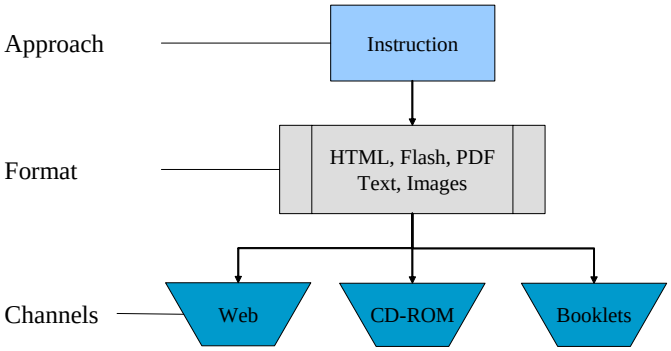

Figure 1 – Product Delivery Components

2.0 Modules and Lessons

2.1 Cognitive Task Analyses

The CTAs provide high to low-level detail on modules and key tasks. By incorporating the key objectives from the systems specifications, the analyses provide a complete and cohesive picture of the proposed product's eight hours of instruction. The Level I CTA (page 11) provides the highest view and is broken into Parts I and II. The modules within these parts are then detailed in the Level II CTAs for Parts I and II down to the proposed lesson level – Colors and Shading (page 12-14).

2.2 Colors and Shading –Lesson 3 (Part I, Module 5)

By the time learners have worked through modules 1 – 4, they will be well-prepared for Lesson 3 in Part I, Module 5. Further, it is assumed that learners will be familiar with basic word processing concepts such as text, backgrounds, paragraphs, and tables/cells. Lesson 3 is composed of procedural and principle-based objectives which will require presentations of steps and concepts. Although the procedures are simple, the principle-based material will require multiple displays and learner applications.

2.2.1 Instructional Objectives

Part A

1. Using MS Word and given a web page residing on their computer containing text, paragraphs, and tables, learners WBAT (demonstrate steps) change the color and shading of each of these elements, as well as the page background.

Part B

1. Presented with four web pages of varying visual quality, learners WBAT identify (select) the highest-quality page as judged with the *Color and Shading Guidelines* job aid.
2. Given a web page that needs visual improvement, learners WBAT to identify (select) two appropriate page changes from a list of 8 while referring to the *Color and Shading Guidelines* job aid.
3. Using MS Word and the *Color and Shading Guidelines* job aid, learners WBAT apply the guidelines to create a web page locally with text, paragraphs, tables/cells, and a page background that achieves optimal web viewing as defined in the job aid.

3.0 Lesson 3 – Part B Outline

Lesson 3 in Part I, Module 5 will adhere to the master lesson process (page 7) and includes aspects organized around Merrill's Component Display Theory (CDT). Part B is outlined below.

Lesson 3 - Part B: Using Colors and Shading Effectively (in Part I, Module 5)			
CDT Element	**Lesson Phase/Content Element**	**Task Type / Description**	**Notes**
	Presentation and Practice Segment		
Introduction			
EF	Hello, and welcome to Lesson 3 – Using Colors and Shading Effectively. In Module 5 we've been working on layout and text formatting.	**Concept**	Image of faculty mentor remains present.
OUT; EG	The purpose of this next lesson is to enable you to apply colors and shading to every element on your page to the best effect.	**Concept**	
MO; OUT	After completing this lesson, you will be able to make the right impression on your site visitors and communicate more clearly. Lesson 3 gives you the remaining tools to optimize the look of your page.	**Concept**	These key objectives tie in to the learner's goals as revealed in the IA.
Eeg	You will also be able to: 1. Identify good and poor-quality pages. 2. Come up with ways to improve poor-quality pages. 3. Apply color and shading guidelines to text, tables, and page backgrounds to create visually appealing and effective web pages.	**Concept** Click **Next** which displays the next page.	
EF	Our lesson has the following parts: A. Using MS Word to set colors and shading. B. How to get the best colors and shading.	**Fact**	
EGp	To get the most out of this lesson, make sure you have completed lessons 1 and 2 in this module – Module 5.	**Procedure**	
EGp; DI	Please download and print the reference guides for this lesson below. If you're not sure how, click the **Help** button: • Selecting an Area and Color • Colors and Shading Guidelines	**Procedure** Click links which download pages. Click **Help** as needed.	The lesson procedures are built around these job aids which are based on job-related tasks.
EGp	Ability to create MS Word files and place text and tables on the page.	**Procedure-A**	
MO	Let's get started!	**Concept** Click **Next** which displays the next page.	

Lesson 3 – Part B: Using Colors and Shading Effectively (in Part I, Module 5)			
CDT Element	**Lesson Phase/Content Element**	**Task Type / Description**	**Notes**
Presentation and Practice Segment			
Knowledge Needed			
EG	As we just learned in Part A, it's easy to change the colors and shading of text, paragraphs, tables, and the page background.	**Concept**	
MO	Now we come to the most important part of the lesson – How to Get the Best Colors and Shading. Here you will learn the key guidelines to make your pages shine!	**Concept** Click **Next** which displays the next page.	
EG	Web pages are primarily for communication and vary in their effectiveness. Of course, our goal is to achieve the highest **visual effectiveness** in our web pages. Visual effectiveness is the degree to which each visual aspect of the page conveys information as intended.	**Concept**	This is the key concept to enable application of the visual effectiveness principle.
EGh	Some pages are hard to read and look at like the ones below in Examples 1 – 3, and some are pleasing and useful like the ones in Examples 4-6. They have high visual effectiveness because everything that is seen works as a team to convey the information. The colors and shading work together.	**Concept**	
DI	Click the small pictures to see the full pages.	**Procedure** Click images which reveal pages. Click **Next** which displays the next page.	This direction will not be repeated for later steps since it is now known by the learner.
EGan	As you can see, a high-quality page is like a beautiful piece of music or a painting with all in balance. Provide graphic of a painting.		
MO	Strive to give your site visitors a good experience; keep colors and shading in balance on your page.	**Concept** Click **Next** which displays the next page.	This direction will not be repeated for later steps since it is now known by the learner.
IG	Now, take a look at examples 1- 4 below and check the box next to the one that strikes the right balance of colors and shading. Which has the highest visual effectiveness?	**Concept –A**	
FBca; FBda	Provide general feedback for any choice.	**Concept** Click checkbox next to best example.	
EG	Visual effectiveness is based in part on readability, contrast, attention flow, interference, and tone		

Lesson 3 – Part B: Using Colors and Shading Effectively (in Part I, Module 5)			
CDT Element	**Lesson Phase/Content Element**	**Task Type / Description**	**Notes**
Presentation and Practice Segment			
Knowledge Needed/Continued			
EGh	Display graphic of components that determine visual effectiveness.	Click **Next** which displays the next page	
EG	Readability is the degree of ease in reading the web page text of headings or paragraphs.	**Concept**	
EGh	Just think of well-designed magazines, journals, and books: They all have good readability.	**Concept** Click thumbnails to view the examples.	
Eeg	Look at examples 1 – 4 below of high and low-readability pages.	**Concept**	Use thumbnail navigation as before.
EGh	Provide comments with each page on why they are low or high-readability.	**Concept** Click **Next** which displays the next page	
Ieg	Now, it's your turn. Look at examples 1-6 below and use the radio buttons to select two that have high readability.	**Concept-A**	
FBca; FBda	Provide comments after selection is made for each example page on why they have low or high-readability.	**Concept**	
MO; EF	Good work. Now, let's look at the next factor in visual effectiveness -- contrast.	**Fact** Click **Next** which displays the next page	
Knowledge Needed section continues with the concepts of contrast, attention flow, interference, and tone.			
Major Tasks			
EG; MO	Ensuring readability is the first step in visual effectiveness. If someone has a hard time reading the text on your web page, it doesn't matter how nice it looks! So, in this section, we're going to learn how to increase readability.	**Concept**	
EGan	Ensuring readability is like a conversation at a party. You have to adjust your voice volume above the background din and make your speech very clear. But, if you or your friends can't speak clearly or loudly enough, it will be very difficult to enjoy the conversation. Show a picture of a party and several conversations occurring.	**Concept** Click **Next** which displays the next page	

Lesson 3 – Part B: Using Colors and Shading Effectively (Part I, Module 5)			
CDT Element	**Lesson Phase/Content Element**	**Task Type / Description**	**Notes**
Presentation and Practice Segment			
Major Tasks/Continued			
EG	You can increase web page readability by using darker and more familiar text colors which increase contrast with surrounding elements and page backgrounds.	**Principle**	
Ieg	Here four examples. Indicate which use the readability principle effectively and which do not. Show four thumbnails linked to larger images.	**Principle-A** Users can click the "effective" or "ineffective" radio button next to each page.	
FBca; FBda	Provide feedback as the user selects each radio button.	**Concept**	
EGh	Good work. As you can see, readability can vary from web site to web site, even though they all look nice. Now, let's look at how to fix these pages.	**Concept** Click **Next** which displays the next page	
Eeg	Here are two low-readability pages and some steps we could take to improve them.	**Concept**	
EGh	Show segments of web pages and provide comments under each one.	**Concept**	
Ieg	OK. Let's take a look at some more challenging examples. For each suggestion under a page, predict whether it would or would not improve readability. Use the *Color and Shading Guidelines* guide.	**Principle-A**	Users should have printed this off earlier in the lesson.
FBca; FBda	Provide comments on each choice as clicked on why they do or do not increase readability.	**Concept** Click **Next** which displays the next page	
Ieg	Now it's time to roll up your sleeves. With the *Color and Shading Guidelines* handy, use MS Word to optimize the readability of the syllabus file below. Download it to your computer and save your changes there. Provide link to example syllabus file.	**Principle-A**	This will provide contextualized practice for far-transfer.
FBca; FBda	How did you do? Compare your result to the example below. Share your work with a colleague for feedback. Provide link to improved syllabus example file.	**Principle-A**	
MO	Good work. Now it's time to look at the next principle in web page presentation – contrast.	**Fact** Click **Next** which displays the next page	

The rest of the major tasks will be covered, one for each concept. The last major task will be more complex and requires applying all the visual effectiveness guidelines in the *Colors and Shading Guidelines* job aid.

Wrap-up and Individual Practice segments follow.

4.0 Design Representation

A uniform best practices CBT lesson process will be used for all modules. Figure 2 illustrates this design based on the work of Clark (1999), although integrating approaches from Gagne (Kruse, 2004) and Bransford, Brown, and Cocking (2000). While the elements below map out the lesson flow, they are not meant to indicate single screens. Content can be configured in a number of ways if it stays within the lesson process.

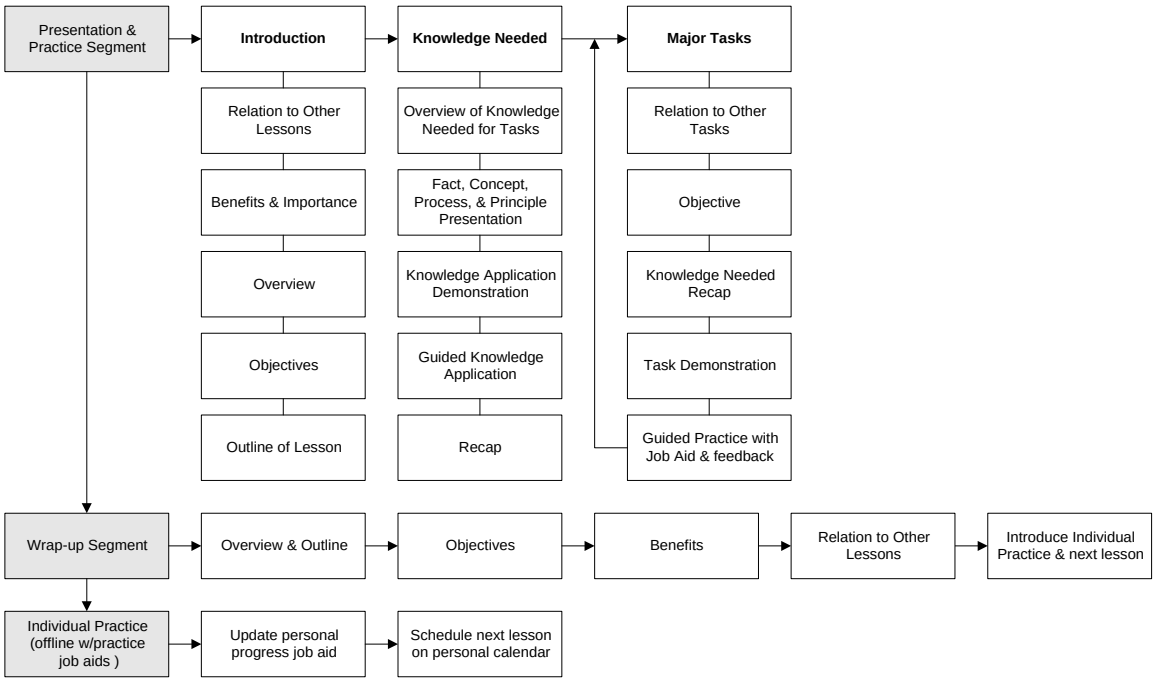

Figure 2: Master Lesson Process

5.0 Justification

The design presented here is based on the findings of the IA, the parameters of the SS, and applicable research literature. The SITE has been the primary driver, especially in terms of content. Faculty are in a unique context which this design addresses with a collegial approach and multiple opportunities for quick success. As Adams (2002) points out, higher education faculty feel unsure in the new media realm. Therefore, this design strives to reassure, respect, and encourage them with job context-related material.

Based in the CDT approach articulated by Clark (1999) and Gagne's process (Kruse, 2004), the learning process proposed provides for experiential, situated learning. Multiple opportunities are provided for learners to practice concepts and apply principles. As key research stresses (Bransford, Brown, and Cocking, 2000), far-transfer depends on learning activities routed in the performance context—an approach this design takes. This design will ensure that faculty will be able to immediately work on real materials since it will incorporate these as faculty use the product in their offices.

Specifically, the design provides for these research-based aspects:

- The material addresses the learner on a personal basis.
- Lessons stress the value of the learnings as applied to learner goals.
- The material engages the metacognitive process of the learner.
- Exercises provide situated practice, applicable to the performance environment.
- The lessons engage the pre-knowledge of the learners by use of analogies and examples.
- Segments are short with frequent practice.
- Learners are provided feedback.
- Examples and non-examples provide numerous contexts.

Moreover, considering faculty anxiety toward the subject-matter, the product design provides a safe, gentle, and effective way to learn in a low-risk environment. Given the design characteristics, learning should be very substantial and satisfying for faculty. As King (2003) points out, "fundamental to the journey of transformation is the means to cultivate that experience." Based on a broad research base, Faculty Web Mentor™ is just such a tool.

6.0 Formative Evaluation

The following questions will be explored with the prototype:

- How will faculty react to the tone of the script?
- Will they need further explanation for the product navigation controls?
- Will faculty have difficulty downloading files or viewing thumbnails?
- What will be the effect of a proposed online agent – the mentor?
- How helpful are the analogies?
- Are there other activities in the lesson that faculty would prefer?
- Are there other software features that faculty would prefer?
- How well will faculty be able to articulate the concepts?

7.0 References

Adams, N.B. (2002). Educational computing concerns of postsecondary faculty. *Journal of Research on Technology in Education*, 34, 285-303.

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King, K. P. (2003) Learning the new technologies: Strategies for success [Electronic Version]. New Directions for Adult and Continuing Education, 98, 49-57.

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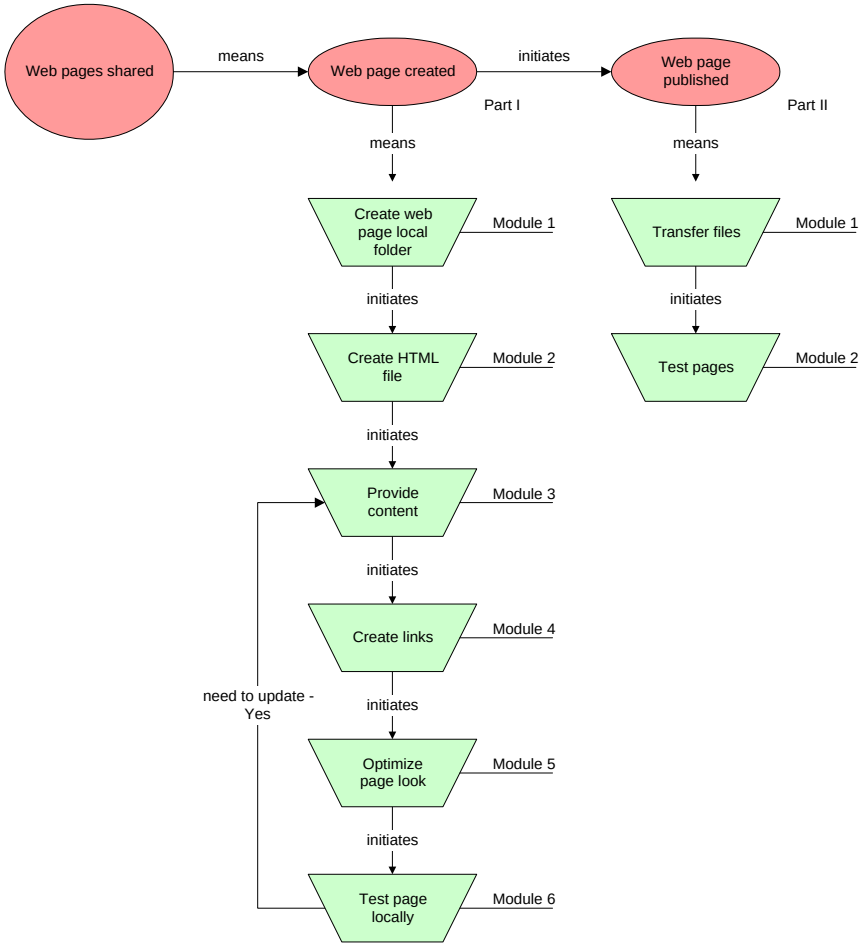
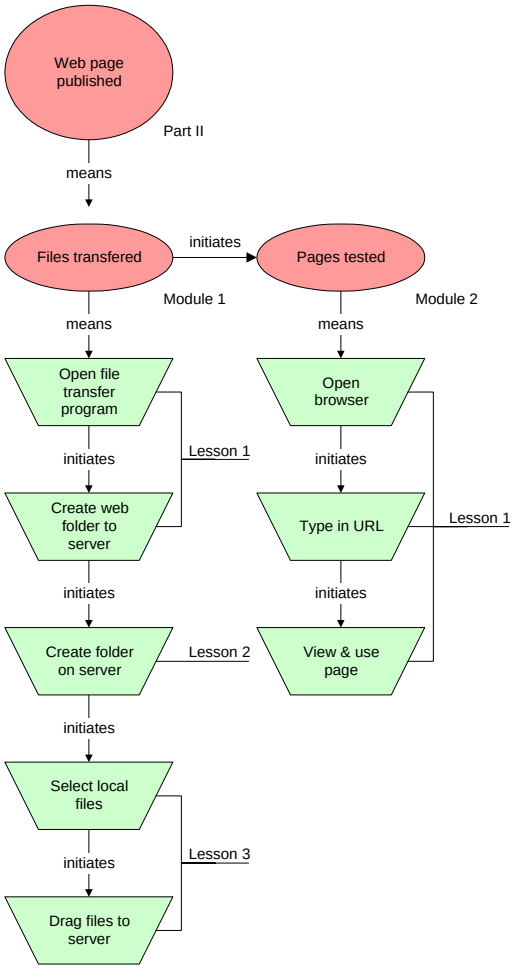
8.0 Appendix: Cognitive Task Analyses

8.1 Faculty Web Mentor CTA – Level I



8.2 Web Page Created CTA – Level II, Part I

8.3 Web Page Published CTA – Level II, Part II



8.4 Colors and Shading CTA – Level III, Part I