Type Justified

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INTRODUCTION

There is growing global need for quality online education with increased classroom engagement and student-focused teaching approaches. The present text-heavy approach dominating online education is wholly unsatisfactory as a learning experience.

Our Web-based teaching module provides an augmented teaching solution that serves as an online tool for hybrid courses in typography, which is a course of major importance for graphic, multimedia, Web, environmental, and packaging design students.

Our examination of the literature is focused on e-learning, constructivist teaching, and the effective incorporation of multimedia into Web-based teaching/learning.

Establishing the need for a new paradigm of e-learning, we then describe the adaptive learning that enables individualized instruction, based on learning style preferences. The new pedagogical framework providing numerous learning styles, continuous assessment, and remediation leads to an extremely powerful teaching/learning environment for creative art of typography.

BACKGROUND

Technology increasingly is becoming part of mainstream education. Terms such as e-learning, online learning, and Web-based teaching refers to the dissemination of learning content over the Internet with a desired instructional design. These learning modules are then accessed by learners to purse educational activities using Internet browsers and servers.

Wedemayer (1981) identifies the importance of independent learning through a student learning activity. He is a proponent of greater learner freedom.

Lee and Ovens (2000) state that in order to create successful Web-based learning experiences, one must consider the creative skill of the developers, the bandwidth, and the hardware and software capabilities.

Pittinsky (2003) sees great potential for e-learning for several reasons. First, there is a renewed strong focus on the learners' needs, the availability of technological resources, the search for new funding sources, and the opportunity to provide education to new markets.

According to Bates et al. (2003), learning from a computer will have a different effect than learning from books or traditional lectures. Each of these activities provides a different form of knowledge. Deep learning (integrated understanding of concepts) takes place when a learner is able to integrate and reconcile all types of learning. Bates adds that it often is helpful to learn about the same thing in different ways.

Aggarval (2000) states that high-quality design of Web-based courses will add significant educational value. In order to design effectively, one must consider the goals, needs, and characteristics of the target audience. Successful Web teaching/learning experiences include a high level of interaction between instructors and students and also among participating students. The integrity of the educational process depends on two-way communication.

Schank (2002) asserts that if learning is not engaging to the student, no real learning takes place. He states that "doing" is interesting. Doing promotes engagement. Therefore, Web-based e-learning that emphasizes interaction and includes simulations and multimedia provides an optimal learning environment.

According to Mishra and Sharma (2004), the probability of student learning is much higher when

students are able to discuss, write, and, most importantly, apply knowledge that is relevant to their daily lives. The project must be complex with no clear-cut answers.

Clark and Mayer (2003) recommend that e-learning courses include both graphics and words, rather than text alone.

They use the term *graphics* to describe a variety of visual elements such as technical illustrations, drawings, charts, diagrams, photos, animations, and video. The use of relevant visuals will foster active learning and increase understanding of the course content. Research shows that images help learners to make mental connections more effectively and provide a deeper learning experience. One of the key terms is *relevant visuals*; in other words, the authors recommend not using images to decorate, but to enlighten and explain information.

A series of tests was done (Mayer, Heiser & Lonn, 2001) using several student groups. Some received information in animation form with concurrent audio; others received the same information with concurrent text. The non-redundant group produced 43% to 69% higher scores on a problem-solving transfer test. Based on these studies, one could make the case that less is more.

In fact, the principle of less is more has been scientifically proven. In design classes, we talk about the Gesthalt principles. The Gestalt school of psychology, which began in Germany around 1912, investigated how we see and organize visual information into a meaningful whole. The conviction developed that the whole cannot be perceived by a simple addition of isolated parts. Each part is influenced by those around it. When we see things that are similar, we naturally group them. Grouping by similarity occurs when we see similar shapes, sizes, colors, spatial location angles or values. In a group of similar shapes or angles, we will notice the dissimilar. This is called the principle of visual anomaly.

The Gesthalt studies also pointed out the fact that, as human beings, we look for patterns and logical connections between visual elements; our understanding increases if we have fewer visual elements to understand. This is quite important since the primary role of design is effective communication, so the principles of effective graphic/multimedia design communication must be transferred in order to produce more effective e-learning.

TYPOGRAPHY MODULE DEVELOPMENT

Typography, the historical examination, design, development, and appropriate use of type fonts, is a subject of great importance for design students specializing in graphic design, Web design, multimedia design, packaging design, and so forth. Type Justified is an interactive, Web-based teaching module that was developed with several goals in mind. The first goal was to provide factual typographic information in an interactive manner and include a built-in evaluation system. The second goal was to create an actual project for graphic and multimedia design students that incorporates effective team-based learning. The third goal was to establish collaboration with an industry partner who could provide evaluation software support.

The resulting module achieves these goals and serves to support instructors and students nationwide within graphic design, Web design, multimedia design, packaging design, industrial design, and so forth.

The module was developed using key technologies to help enhance the learning experience, including HTML, Javascript, Macromedia Flash technologies, and the iDesign evaluation software program.

The students had to consider basic Web variables such as the importance of dealing with screen resolution limitations, font selection for the screen, understanding, flexible page size, browser issues, creating graphic or image-based type for the Web, and motion on the computer screen.

Figure 1 identifies the major steps of the module design and development. The six-member advanced design student team was divided into three subgroups that focused on separate aspects of the project. All six team members met twice a week for progress checks, and once a week they met with their instructor. The students and the instructor kept in constant daily contact via e-mail. The content outline and project timeline was developed along with a concept map that clearly identified the necessary tasks. Subgroup 1 started work on the interface design, while subgroups 2 and 3 worked on typographic history research and literature evaluation. The final interface design concept was established along with the color palette. Production work was divided among the subgroups, followed by weekly progress reports and presentations. Web module production included image com-

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