

Summary of Instructional Web Site Design Principles—A Literature Review and Synthesis

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Introduction

This paper examines a literary review and synthesis written in 1999 by Richard H. Hall of the University of Missouri—Rolla. Through a summary of the synthesis, the reader will be able to determine whether or not Hall's findings are still of use for instructional designers of the present day.

Summary of Instructional Web Site Design Principles

The author begins his paper by stating his intent to review literature that might be useful for instructional designers developing web-based instruction. He aims to find common ground between the sources that would be useful as generic guidelines for designing websites, rather than entirely different models and approaches that vary between purpose and audience. Hall, in addition to others he cites as reinforcement of his opinion, believes that generic principles would make an ideal starting point, though (also through the citation of others) he also concedes that there can be no one-size-fits-all approach (1999). He also reminds readers that websites are merely a means to an end, and not the end itself.

Hall moves on to discuss the present state of research, pointing out that as of the time he wrote his paper, little assessment had been done thus far on Web-based training methods (1999). Few formal studies had been conducted by then, but a number of other researchers had called for more controlled and systematic research. Despite the lack of contemporary research, the author believes his review will be useful to instructional designers as a source of insight (Hall, 1999). Even taking into account the lack of research available, he notes that there is already a consensus from the experiences of instructional website designers, backed by what little controlled studies existed by that point in time.

The author then addresses overall effectiveness of online learning versus traditional learning, noting that some of the experiments conducted already show that online learning can be just as equally

effective (1999). Though the studies had some issues, Hall believes they are still valuable in convincing reluctant professors that instruction on the Web is just as effective in the classroom. He notes that the challenge in designing effective instruction is through its design and delivery, and signals to the reader that the remainder of his review will focus on how to differentiate poorly-designed instructional sites from effective ones (Hall, 1999).

Hall moves on to discussing the organizational framework of instructional sites. Using figures, he explains the basic components of a website: pages displaying text and images, links to other pages, and the difference between the site structure itself and the outside Web. Hall notes that a self-contained site is no different from a hypertext/hypermedia program (1999). Concerning text, he remarks that a considerable number of researchers agree that there should not be too much text presented, certainly not to the point that a user has to scroll to see it all (1999). In fact, several of the researchers cited recommend less text for online instruction than for equivalent traditional instruction (Hall, 1999).

Additionally, the author cites a consensus among researchers that text should be broken up into smaller instructional units to enhance learning (Hall, 1999). These researchers, Hall states, are also in consensus that text should not be broken up traditionally—as with pages and chapters—but through the use of hyperlinks. Hyperlinks provide the learner with a measure of control over how they process information, and make them something of a participant in the instruction (1999). A number of contemporary researchers cited by Hall advocate for important information clearly noted at the top of a page as it allows learners to clearly discern the overall structure of the content (1999). In addition, he notes that computer monitors are wider than they are tall, something that is different from traditional media such as books. The author cites research that finds learning is more effective with shorter lines; and just as newspapers use narrow columns to emphasize short line length and prevent reader fatigue, so too should web designers consider multiple columns in their page layout (or use images to break up text flow) (Hall, 1999).

Hall uses this transition to discuss the use of images, noting a number of resources which were not developed for display of text and images on the Web, but are still useful for designers. He notes that all of this research is an extension of Paivio's dual-coding theory, and that there is a plethora of research validating its use (Hall, 1999). Although the Web allows for new possibilities with the use of dynamic images and videos, the author cautions that most contemporary literature on web design admonishes instructional designers to use them carefully and ensure that whatever images are used directly support text that is displayed (1999). Again, he emphasizes that instruction should be broken up into small units for effectiveness, and should also work to minimize time spent downloading page content—another reason to avoid overloading instruction with images (1999).

From there, Hall moves on to discuss hyperlinks in detail. As with all else discussed so far, he states that there is a consensus among contemporary literature that any links included on a page must serve a clear purpose; a study demonstrated that too many links to make information on a page incomprehensible to learners (1999). In addition, the author cites research cautioning designers to avoid links that navigate within a page, as that can also confuse learners (1999). Clearly labeling links allows a learner to also make an informed decision on whether or not they would like to click on that link as well provide clearer understanding of the site's overall layout (Hall, 1999). Backed by numerous research citations, the author states that the open, chaotic nature of the Web is detrimental to effective learning, and that too much learner-based control can lead to learners becoming “lost in hyperspace” (1999). He provides research and literature that proposes ways to combat this problem and to provide learners with guidance. Many sources that Hall cites recommend clearly-organized websites with a consistent design and appearance that have an obvious path set up through the content, segmented in a modular fashion (1999). However, he also cites research that recommends leaving site navigation flexible for more experienced learners; both aims can be accomplished through providing hyperlink navigation that clearly leads back to the beginning of the content (1999). While the author cautions

against hyperlinks that navigate within the same page, he does recommend the use of intrasite links—what he calls internal links—that can be coupled with the use of Javascript and other Web languages to provide activities and exercises for learners (1999). Though the nature of the activities may vary greatly, he notes that contemporary literature most commonly recommends learner-centered activities as well as those that relate content to issues within the “real world” (Hall, 1999).

Hall then discusses external resources. According to Hall, the usage of external sites as either part of an exercise or for exploratory reasons is a powerful tool for providing “real world” context as well as an example of the advantages Web-based technology brings to learning (1999). In the case of exploration, the author cites researchers who admonish that such activity needs to be clearly relevant to instruction so that learners are encouraged to process the information they read (1999).

Following on from external sources, Hall moves onto the point of communication, citing it as another powerful aspect of Web-based learning, and important to include in a course to prevent learners from feeling isolated (1999). Online communication can, according to his research, give structure to discussion that is harder in traditional settings (1999). However, learners must have some guidance when provided an opportunity to discuss; Hall's research recommends, for example, requiring a minimum amount of postings rather than simply leaving a line of communication open (1999). Group projects are another example provided as a potential way to keep learners in communication with the teachers and one another.

In the author's conclusion, he closes by summarizing the common themes present from his literary review: thoughtful site organization that is both modular and flexible, including interactive activities with a “real life” basis, and to make use of the opportunity to create collaborative learning opportunities for learners (1999). Hall is confident that instructional designers who keep these points in mind can make web-based learning that is as effective as traditional classroom settings.

Conclusion

Although written before the start of the new millennium, much of the content of Hall's literary review remains a solid guide for instructional designers who develop Web-based learning in the present day. The adoption of new web standards such as HTML5 and CSS3 have not worked to diminish the common principles that the author has identified; the idea of breaking instruction up into smaller, easily comprehensible parts and to not allow instruction to overflow and require learners to scroll to find information continue to be cornerstones of instructional multimedia production. Were it not for the dates present for cited resources (and for the paper itself), one may never suspect the literary review to be several decades old by now; given the rapidly changing pace of web technologies, this speaks strongly to this paper's usefulness as a guide for modern instructional designers.

References

Hall, R.H. (1999). *Instructional web site design principles: A literature review and synthesis*. Retrieved February 3, 2016, from http://lite.mst.edu/media/research/ctel/documents/vuj_99_hall_principles.pdf.

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