

# Chapter 8

## User Testing and Iterative Design in the Academic Library: A Case Study

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### ABSTRACT

*This chapter describes the iterative design process used to create a series of information literacy tutorials for an academic library. This case study explains how the various stages of the design process, including setting goals, prototype testing, design refinement, and evaluation, lead to a series of learning objects that are pedagogically sound, user-focused, and engaging. The authors also provide templates and test scripts that can be re-used by scholars and practitioners. The chapter concludes with recommendations for including user testing in the design process for any educational product.*

### INTRODUCTION

In this chapter, we present a case study of the development of digital learning objects designed to teach information and research literacy skills. Specifically, we will describe the development process with an emphasis on how iterative design and different testing techniques are employed to produce learning objects that are both engaging and pedagogically sound. We approach this topic from two perspectives: learning design and user-centered design (UCD). As learning designers we are concerned with making high quality, pedagogically sound learning objects that reflect clear, measurable learning objectives. We follow Mestre et al.'s (2011) definition of a learning object as a “reusable instructional resource... developed to support learning” (p. 237). The UCD lens provides tools to help keep the focus on the end

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user, in this case the learner, not just in terms of content, but also in terms of how the design and function of the learning objects respond to how users naturally engage with the materials (Barnum, 2011; Rubin, Chisnell, & Spool, 2008).

Critically, following UCD principles means that while the design of our learning objects is informed by learning theory, we do not rely on theory alone, nor our own intuitions, to tell us what users want and need. Rather, we draw conclusions based on direct evidence of user behavior and attitudes. Our specific objective for this chapter is to explain how we combine these two perspectives by illustrating the testing process at different stages during the development of digital learning objects. We will demonstrate how this approach improves not only the design and function, but also the content of learning objects. We will conclude by discussing the implications of iterative design for pedagogy, the insights we gained through the process, and recommendations for designers and practitioners.

## **BACKGROUND**

### **Digital Learning Objects and Library Instruction**

The roots of library instruction date to the nineteenth century, as the growth of libraries and library collections required reader assistance services (Weiss, 2003). These services gradually evolved into instructional practices that formed the basis for modern information literacy and research skills educational programs. The modern academic library engages in a significant amount of teaching, both formally within the classroom, and informally during the day-to-day work of helping users navigate library systems. As the number of students taking at least one course at a distance has continued to rise (Allen, Seaman, Poulin, & Straut, 2016), academic libraries have also been called upon to provide online information literacy instruction. Fully online and blended information literacy instruction has been found to be as effective as face-to-face instruction (Anderson & May, 2010).

Asynchronous digital learning objects in particular can be useful tools for both distance and face-to-face instruction because they allow learners the opportunity to access resources and information at their own pace, at just the right grain-size (specific to their point-of-need), and as many times as they desire. Popular examples of such tools include videos, screencasts, and slideshows, such as those found in Khan Academy and edX. There is also significant research that indicates students prefer online information literacy instruction to traditional face-to-face lectures (Clark & Chinburg, 2010; Silver & Nickel, 2005; Su & Kuo, 2010). There is accordingly a long tradition of creating asynchronous online tutorials to teach information literacy, with the vast majority produced as screencast videos (Baker, 2014; Mestre et al., 2011; Tewell, 2010).

Research on the effectiveness of different types of digital learning objects designed for information literacy and other library-related instruction is somewhat mixed. For example, Mestre (2010) found that students who viewed a static tutorial composed of text and screenshots did better at recreating a search than did students who watched a screencast tutorial that included audio narration and pop-ups. In addition, students preferred the static tutorial for the ability to refer back to it during the task, which they indicated was too difficult to do with the screencast tutorial. A follow up study similarly revealed that students performed better with the static tutorial than with the screencast tutorial (Mestre, 2012). In contrast, Sachs, Langan, Leatherman, and Walters (2013) found that students expressed a preference for a dynamic tutorial that included animation, video, and audio, over a version that included only static

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