Chapter 2.44
Applying Contextual Design to Educational Software Development

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ABSTRACT

Contextual design is a methodology for developing information systems from a rich understanding of customer work practice. This chapter considers how contextual design can be applied to educational software development and how contextual design might interact with instructional systems design (ISD). Following a brief overview of ISD, I describe contextual design and provide a detailed case study of its application to educational software development—to the design of an online tool for music listening and analysis in undergraduate and graduate music education. I conclude with some reflections on the relevance of contextual design to instructional designers.

INTRODUCTION

Contextual design is a methodology for designing information systems from a rich understanding of customer work practice (Beyer & Holtzblatt, 1998). This chapter considers how the contextual design methodology can be applied to the development of educational software and how contextual design might interact with instructional systems design (ISD). I begin with a brief overview of ISD, brief because I assume readers of this chapter will already have some acquaintance with ISD. I then describe contextual design and provide a detailed case study of its application to educational software development—to the design of an online tool for music listening and analysis in undergraduate and graduate music education. I conclude with some reflections on the relevance of Contextual Design to instructional designers.

INSTRUCTIONAL SYSTEMS DESIGN

The ADDIE (analysis, design, development, implementation, evaluation) model of instructional systems design provides a general framework for designing instruction. The model seems to have emerged anonymously during the 1960s (Michael Molenda, personal communication, August 1, 2002) but has since become broadly known. In a 1988 booklet from ASTD, ADDIE is described as one of a variety of models for instructional systems design (ASTD, 1988, p. 2). A Web search of "addie" and "instructional systems" yields hundreds of hits. ADDIE is widely known and is sometimes even described as *the* instructional systems design model (e.g., Fardouly, 1998).

However, ADDIE is not the only model for instructional systems design. Over the years, more refined, comprehensive, flexible models have evolved; it is these more recent models that structure the textbooks in the field (e.g., Dick & Carey, 1996; Kemp, Morrison, & Ross, 1998). For example, the Kemp, Morrison, and Ross model contains nine *elements* (their preferred term) instead of five (pp. 5-7):

1. Instructional problems
2. Learner characteristics
3. Task analysis
4. Instructional objectives
5. Content sequencing
6. Instructional strategies
7. Designing the message
8. Instructional delivery
9. Evaluation instruments

Kemp, Morrison, and Ross add some additional overarching topics such as project management, planning, and support services, and state that not all steps need be included in every situation, nor do the steps need to be strictly linear (pp. 5-7). They also emphasize the need for formative evaluation and revision during design (pp. 162-163).

CONTEXTUAL DESIGN

Contextual design and ISD have different backgrounds. ISD models are process models for the development of instruction or instructional *systems*. In this context, "systems" refers to the interrelatedness of all the parts of an instructional program and the attempt of the development process to account for the many parts and their interdependencies. ISD primarily targets instructional *content* (objectives, material, sequencing, testing). Contextual design grew out of very different soil—a soil in which "systems" means "information systems," i.e., computers, software, and related technology. As a (computer) system design method, contextual design focuses on how best to design systems (hardware, software) to meet customers' needs. While these needs may include learning or training, the concern is less with learning how to do something than with actually doing it—quickly, cheaply, effectively. With instructional design, *content* is nearly always critical. With contextual design, as will be seen below, *work practice* is critical.

Though they sprang from different soil, contextual design and ISD have some occasion to become acquainted. One reason is that learning must be taken into account if work performance is to excel. A second reason—and the one motivating this case study—is that learning itself is a variety of "work." Moreover, with the growth of online learning environments, designing instruction (or learning) is not always easily separable from the design of the technology used in delivery. This linkage is not new. Instructional designers have had to concern themselves with the design of delivery technology for decades. But the capability and malleability of computer-based and especially Web-based delivery technologies has heightened the need for instructional designers to attend to technology design. I will return to this distinction