Implementation of a Three Phase Rapid Prototyping Instructional Development Model

Short Abstract (75 Words):
What are the effects of using rapid prototyping in the field of Instructional Design and Development? This presentation will focus on a model for implementing rapid prototyping in instructional development and the implementation and evaluation of the usage of the model including demonstrations of various stages of the prototype.

Full Text (750 – 1000 Words)

Introduction

Rapid prototyping in instructional design involves the use of a working model early in design and development. This strategy has many potential benefits including reduction in production time and the cost of late development revisions (Jones & Richey, 2000). There may be other benefits related to the satisfaction of the client because the client can interact early on with the development of final product. This presentation will describe a rapid prototyping model for instructional development and data from the implementation of the rapid prototyping model.

Model Description

The Three Phase Rapid Prototyping Instructional Development Model (3P RPID Model) is an instructional development (ID) model based on the basic ID processes outlined by the ADDIE process (Analysis, Design, Development, Implementation, and Evaluation) (Gustafson & Branch, 2002). This model takes into account several changing views of the ID process including Rapid Prototyping (Gustafson & Branch, 2002; Jones & Richey, 2000) and the ability to adapt instruction to new and evolving forms of digital technology (e.g. computers, internet, cheaper DVD and CD media and production). The 3P RPID Model is a general model that allows for a great deal of flexibility when dealing with a range of solutions over a variety of contexts.

Three Phases

This ID Model is marked by three developmental phases: Front-End Analysis, Rapid Prototyping (design and development), and Project Deployment. All three phases are related to a Rapid Prototyping environment. There have been several different descriptions of Rapid Prototyping in the literature (Dorsey, Goodrum, & Schwen, 1997; Jones & Richey, 2000; Piskurich, 2000; Tripp & Bichelmeyer, 1990). Rapid prototyping is a concept that has been derived from manufacturing. The concept is based on the idea that it is easier and more cost-efficient to make changes to a conceptual prototype than it would be to alter more finished product. A major goal of rapid prototyping in ID is to reduce development costs by developing small, functional prototypes and testing their effectiveness before locking into a final, more expensive production.

Several rapid prototyping models already exist in the literature. Dorsey, Goodrum, and Schwen (Gustafson & Branch, 2002) have described an iterative model with no front-end analysis, where the instructional solution develops from the refinement

of the prototype. Jones and Richey (Jones & Richey, 2000) describe a more comprehensive rapid prototyping model that encompasses the ADDIE formula. Piskurich (Piskurich, 2000) presented a less linear model that encompassed all phases of the ADDIE formula. The common element in these models is the iterative design and development step focused on refining a prototype.

One difference between these rapid prototyping models is that one uses front-end analysis while the other does not. Dorsey, Goodrum, and Schwen lack a front-end component. Jones and Richey include, as a minimum, identification of an audience, instructional need, and content/task analysis. It may be more helpful to have more analysis tools in place in order to maximize the effectiveness of the initial stages of the prototyping.

The 3P RPID Model realizes the potential that increased front-end analysis can provide for the production initial prototypes. The 3P RPIID Model does not sacrifice quality for efficiency. The goal is to use a rapid prototyping model, during development, which focuses on solidifying a final prototype. This iterative process reduces final cost and maximizes the effectiveness of the final product.

Model Implementation

The 3P RPID model was used by college faculty to create a web-based instructional support system to support student learning out of traditional biology lab spaces (Fried, 2006). The first major goal of the project was to create a sustainable website that students could use outside of their normal lab setting for review, learning, and communication. The second goal was to create a stable implementation that was easily maintained by the course faculty. The final product included pictures, multimedia interactions, areas that faculty would maintain, and practice tests and quizzes.

A rapid prototyping approach was selected for this project for several reasons. First, a prototype of the product already existed; it made sense to use the existing prototype to collect data. Second, the courses that this product was to be used for were offered over the summer which offered a great place to deploy the product to a small test group.

The final product was successful for several reasons (Fried, 2006). However, one practical and exciting outcome was the positive reaction that the participating faculty felt towards the finished product. Because of the rapid prototyping used to develop the final website, the faculty members were involved with the development process from the initial phases of the project. This led to a strong sense of ownership and responsibility in maintaining the final product.

Questions for Presentation

This presentation will focus on a brief description of the 3P RPID model, a description of how the development process worked including demonstrations of several phases of the prototypes, and analyses of evaluation data related to the final product implementation. Discussion will revolve around several important questions:

Why was rapid prototyping selected?
How was the prototype developed?
What were the benefits and challenges of using rapid prototyping?

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