Chapter VII

The DODDEL Model: A Flexible Document-Oriented Model for the Design of Serious Games

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ABSTRACT

This chapter proposes a document-oriented instructional design model to inform the development of serious games. The model has key features in that it promotes a theoretically inclusive approach to learning, a focus on game elements and an emphasis on documentation to provide the rigour necessary to be used as part of a broader project management model. The model defines increasingly granular stages leading to final production documentation for software development. Each design stage contains a series of iterative co-dependent elements. It is proposed that the model can form a base for prescribing and managing activities within an industry context but also as a means to teach the instructional design process for serious games within a higher education setting. A case study of the initial implementation of the model is discussed in order to contextualise it and provide a basis for future enhancement.

INTRODUCTION

Instructional design models are often used to guide the process of designing and developing a range of learning media. They have value in describing the design process; managing the process; prescribing activities within it; communicating with the clients and other key stakeholders; and finally, teaching and conducting research about the process.

There are a number of well known design models for instructional technology that have been well received and implemented in many settings. Most are influenced by the common
The DODDEL Model

procedural phases of Analyse, Design, Develop, Implement, and Evaluate (ADDIE). They vary in the extent to which they can be described as a design model, project management model, or instructional theory. They also vary in the extent to which they are prescriptive in the nature of the activities involved in design. One of the most common models, developed by Dick and Carey (1990) demonstrates both the strengths and weakness of traditional instructional design models. It provides a structure similar to the generic ADDIE model that identifies the stages inherent in instructional design and emphasis key points such as evaluation and setting objectives. However, the terminology used (such as ‘write performance objectives’ and ‘develop criteria referenced tests’) emphasises the behaviourist nature of the approach and its focus on traditional computer-based training rather than the multiplicity of learning experiences available in games and more contemporary approaches to learning. This level of prescription can restrict the types of products that can be developed, particularly when working within a more open epistemology such as constructivism, which seeks to create environments that facilitate learning rather than promote content acquisition (Jonassen, 1994). Others such as the Layers of Necessity Model proposed by Tessmar and Wedman (1990) accommodate the multiplicity of decisions inherent in the design process but are based on broad principles rather than procedures. This can limit their direct applicability, particularly for novice designers.

This chapter represents an attempt to draw from the best of existing methodologies. The goal is to provide a clear structure to guide the instructional design process, while allowing for the iterative and creative elements of game design and its inherent focus on the end user experience.

**A PROPOSAL FOR A DESIGN MODEL FOR SERIOUS GAMES**

There is some precedent when exploring instructional models that may have value in the design of serious games. Ryder (2003) lists a range of models, some of which are quite prescriptive in nature. The vast majority however can be more effectively described as approaches, since he includes reference to fundamental psychological approaches as well as general guidelines which would underpin the design and development process, including Bloom’s Taxonomy of cognitive outcomes and Keller’s ARCS theory of motivation. Many of these have potential to be integrated into a model for serious games design, particularly those that focus on experiential aspects of design such as motivation, flow, and end-user attributes.

These features tend to form the focus of game design models. The MDA model for example (Hunicke, LeBlanc & Zubek, 2004) provides a simple framework for game design based upon three components of:

- Mechanics, describing the components of the game that can be represented as algorithms;
- Dynamics, the interaction of the game based upon user input over time; and
- Aesthetics, describing the intended emotional responses evoked in the player throughout gameplay.

Björk, Lundgren, and Holopainen (2003) provide another model that is deliberately ‘interaction-centric’, using game ‘patterns’ as an approach to articulate the gameplay underpinning design. Such models are inherently game oriented but provide little benefit to the instructional designer, who may be guided primarily by stated learning outcomes rather than an archetypal form of gameplay.
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