The Learning Games Design Model: Immersion, Collaboration, and Outcomes-Driven Development

Barbara Chamberlin, New Mexico State University, USA
Jesús Trespalacios, New Mexico State University, USA
Rachel Gallagher, New Mexico State University, USA

ABSTRACT

Instructional designers in the Learning Games Lab at New Mexico State University have developed a specific approach for the creation of educational games, one that has been used successfully in over 20 instructional design projects and is extensible to other developers. Using this approach, game developers and content experts (a) work collaboratively to ensure educational goals and outcomes are appropriate for the learner and the learning environment, (b) immerse themselves in both content and game design, and (c) test extensively throughout development with members of the target audience. The authors describe the model, discuss the implications of this approach for the creation of effective educational games, and share case studies based on the design model in practice.

Keywords: Education, Educational Game Design, Instructional Design, Multimedia, Technology, Video Games

INTRODUCTION

During 20 years of developing educational and serious games, designers at New Mexico State University have refined a process for creating educational games. Using their Learning Games Design Model, game developers (programmers, artists, writers, and project managers) work collaboratively with content experts (educators, instructional designers, and researchers) throughout the game design process. Members of both groups collaborate early in the process, and all team members are given responsibility for both game design and educational outcomes. All members of the design team (usually 6–12 individuals) work together to understand the content and to refine educational objectives and adjust them to gameplay mechanics. The team uses extensive formative evaluation during the design process. This cooperative approach allows content specialists to embrace all aspects of gameplay in working towards educational goals, and game developers can design and
revise gameplay while keeping educational objectives a priority. Herein, the authors describe the model, discuss the implications of this approach for the creation of effective educational games, and describe case studies showing the model in practice.

BACKGROUND

There is an explicit concern that efforts to promote effective design models for the creation of educational video games are lacking (Bjork & Holopainen, 2005; Shafer et al., 2005). As Salen and Zimmerman (2006) mentioned, game designers or design teams have unique processes to elaborate video games; however, little is offered in the literature regarding instructional design models for creating video games with educational purposes (Watson, 2007), or what literature calls serious games (Kankaanranta & Neittaanmaki, 2009), epistemic games (Shafer et al., 2005), or instructional games (Hirumi et al., 2010a). This may be because game design is a complex process (Gunter et al., 2008; Hirumi et al., 2010b). While game designers or design teams offer distinctive approaches to video game development, the relevance of an iterative design process in the creation of video games is undeniable (Salen & Zimmerman, 2006).

Game design involves groups of people with different academic backgrounds (Hunicke et al., 2004; Tang & Hanneghan, 2011). Development of educational and serious games is often done in an environment in which instructional designers or content specialists establish educational goals and possibly even begin game development, then employ a development team to create the game. Anecdotal reports from serious game design teams describe recurring disagreements, and sometimes tension, between the instructional designers and developers, as well as perceived competition between engaging gameplay and measurable learning outcomes. Hirumi et al. (2010a) pointed out that “instructional designers know little about game development and video game developers may know little about training, education and instructional design” (p. 27). The design approach followed by instructional designers, content experts, and game developers at NMSU’s Learning Games Lab overcomes this obstacle by integrating content, instructional design, and gaming aspects of the process.

THE LEARNING GAMES DESIGN MODEL

Notable in NMSU’s process is the integration of content specialists, learning experts and stakeholders (usually teachers and learners) with their creative team, throughout the design process (Figure 1). NMSU’s collaborative approach contrasts with a design model in which educators design a game and then contract developers to build it, or an approach where game developers hire a consultant as part of an educational game design process. Under the Learning Games Design Model, all team members are at the design table throughout the process, so that all members are involved in asking the guiding questions, reflecting on expected evidence of learning, and brainstorming engaging and meaningful learning experiences. In this way, all members bring their own expertise to share with others. As inevitable changes occur throughout the iterative design process, each member of the development team is well equipped to think through the changes to find valuable solutions: the content experts understand game mechanics enough to relate gameplay to the educational objectives, and the game developers have played a role in shaping the educational outcomes. The whole design process is team-focused, and each team member has a different professional background that contributes to the overall success of the games. When everyone at the design table has equal input into the final product, richer products are developed: products that reflect the innovation of design professionals, the pedagogical skill of educators and the in-depth knowledge of content experts.

The rationale for this model is the strength of the multi-disciplinary process, particularly
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