

The design, play, and experience framework.

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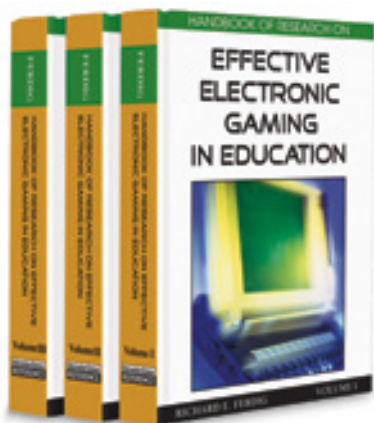


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The Design, Play, and Experience Framework

Brian M. Winn (Michigan State University, USA)

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Abstract

This chapter introduces a framework for the design of serious games for learning, called the design, play, and experience framework. The author argues that the great potential of serious games will not be realized without a formal design approach. To that end, the author presents and thoroughly explains the design, play, and experience framework which provides a formal approach to designing the learning, storytelling, game play, user experience, and technology components of a serious game. The author concludes by detailing how the framework provides a common language to discuss serious game design, a methodology to analyze a design, and a process to design a serious game for learning.

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Background

While learning through play is not a new concept (Dewey, 1916; Malone, 1981; Papert, 1998; Piaget, 1951), increasing technical and aesthetic sophistication, and growing popularity of commercial digital games across diverse demographics (ESA, 2006), have attracted a rebirth of interest on the part of scholars and teachers to create new and improved games for learning (Van Eck, 2006). Evidence of perceptual, cognitive, and social benefits of playing games is growing (e.g., Gee, 2003, 2005; Johnson, 2005; Kierrimuir & McFarlane, 2004; Lieberman, 2006; Ritterfeld, Weber, Fernandes, & Vorderer, 2004; Shaffer, 2006). Linguist and learning scholar James Gee (2003, 2005) believes that games are enjoyable because of learningâ€™ they present just the right amount of challenge, support, and feedback, progressively rewarding mastery with new challenges. This experience parallels other known optimal states of happiness, or *flow* (Csikszentmihalyi, 1990).

The structure of games mirrors good pedagogy, offering progressive problem solving and scaffolded learning. Van Eck (2006) demonstrates that games embody all phases of Gagneâ€™s (1985) Nine Events of Instruction (events that activate processes needed for effective learning). These events are: gain attention, inform learner of objectives, stimulate recall of prior learning, present stimulus material, provide learner guidance, elicit

performance, provide feedback, assess performance, and enhance retention and transfer.

Games excel where traditional in-person classroom training and online Web-based training fall short. Most notably, games are effective at engaging students and making them an active participant in their education process. Among education scholars, this is referred to as active learning. Active learning is a form of constructivism, based on a student-center model of instruction (Svinicki, 1999). Active learning assumes the student must be active in the construction of his or her own knowledge, what Dewey (1916) referred to as learning by doing, rather than a passive recipient of information. Active learning has been shown to promote better recall, enjoyment, and understanding than traditional instructional techniques, such as lecturing (Gibbs, 1992; Mujis & Reynolds, 2001; Petty, 2004) and is the cornerstone of other progressive pedagogy, including problem-based learning and collaborative learning.

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Key Terms in this Chapter

Prototyping: Developing a game design into a playable format for purposes of play-testing in a fashion that requires minimal time and resources to implement. The prototype is often not built on the actual technology of the final game. For example, a computer game may first be prototyped as a board game.

Serious Games: Games that serve a purpose beyond just entertainment, such as education or training.

Iterative Game Design: The typical game development process, including crafting an initial design, creating a prototype of the design, play-testing the prototype, and iterating back to modify the design based on the results of the play-test.

Heart of Serious Game Design: The ideal overlap between pedagogical theory, subject matter content, and game design.

Exogenous Educational Games: Games in which the learning content is adding on top of successful game mechanics without significant modification.

Balancing: A key activity in the iterative game design process in which the designer refines the design of a game after play-testing to better achieve the goals of the design that were not realized in the play-test.

Endogenous Educational Games: Games where the game play is informed by the learning content and pedagogical theory.

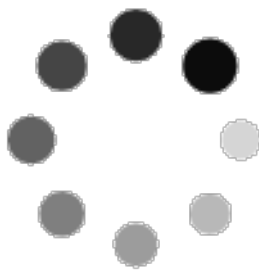
Game Design: The process of developing a plan for the learning content, pedagogy, game mechanics, and user interface in a serious game.

Game Mechanics: The formal rules that define the operation of the game world, what the player can do, the challenges the player will face, and the player's goals.

Game Dynamics: The resulting run-time behavior of the game when the game's rules, or mechanics, are instantiated over time with the influence of the player's interactions.

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