Chapter 15
Elements of Game Design:
Developing a Meaningful Game Design Curriculum for the Classroom

Danielle Herro
Clemson University, USA

ABSTRACT

This case examines the development of a game design curriculum offered to high school students as an in-school elective course in the Oconomowoc Area School District (OASD), a Wisconsin suburban school district of 5,200 students. Elements of Game Design (EOGD) was created by an Instructional Technology Administrator (ITA), Technical Education (TE) teacher, and Visual Arts (VA) teacher in 2010, and implemented 9 times during the 2011-12 school year. The rationale for proposing the course was based on the overlap of research, trends, and experience studying game-design and game-based learning environments. To that end, it is important to note the ITA was simultaneously completing an educational technology doctoral degree focused on digital media and learning and engaged in research involving Massively Multiplayer Online Games (MMOG) and Augmented Reality Games (ARG).

REVIEW OF THE LITERATURE INFLUENCING COURSE PROPOSAL AND DESIGN

The last decade has seen social and behavioral science theorizing game-based environments motivate, engage, and incorporate good learning principles (Gee, 2003; 2004; 2005; Shaffer, Squire, Halverson & Gee, 2005; Squire & Jenkins, 2004; Squire & Steinkuehler 2005; Squire 2008). Digital media and learning research clearly supports game design curricula as a viable method of teaching complex and collaborative problem solving, strategizing, and emulation of real-world processes and system thinking (Gee, 2003; 2007; Shaffer, Squire, Halverson, & Gee, 2005; Squire, 2008). Significant bodies of research suggest games have the potential to increase learning, yet many of these studies have been based on out-of-school or after-school programs (Squire & Durga,

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2008; Steinkuehler & King, 2009; Ito, Horst et al., 2009). The few existing authentic in-school opportunities are typically relegated to charter school programs as curriculum requirements, attitudes, logistics, support for teachers and social and cultural structures present barriers in adopting gaming in-school (Klopfer, Osterweil, & Salen, 2009, p. 18). Built on principles of collaborative play, inquiry-based learning, systems thinking and creative problem solving, schools such as Quest to Learn and ChicagoQuest apply successful game-based learning principles to understandable frameworks for learning (Salen, Torres, Wolozin, Rufo-Tepper, Shapiro, 2011).

Moreover, recent guidelines and standards for literacy suggests games and game design are a powerful way to adopt New Media Literacies (Jenkins et al., 2006), meet the International Society for Technology in Education (ISTE) National Educational Technology Standards (NETS) for students (ISTE, 2007), and address technology trends expected to impact teaching and learning (Johnson, Smith, Levine, & Haywood, 2010). According to the annual Horizon Reports:

K-12 students are interested in experiencing and modifying game-like spaces accessed on the web (Johnson, Levine, Smith & Smythe, p. 6, 2009).

Based on the success in industry, the military, online play, and emerging research on the cognitive benefits of game play, *interest in game-based learning has accelerated considerably in recent years* (Johnson et al., p. 8, 2010). The report further avers,

Developers and researchers are working in every area of game-based learning, including games that are goal-oriented; social game environments; non-digital games that are easy to construct and play; games developed expressly for education; and commercial games that lend themselves to refining team and group skills (p. 17).

The National Education Technology Plan 2010 (NETP), specifically points to games as a conduit to "provide immediate performance feedback so that players always know how they are doing" maintaining "they are highly engaging to students and have the potential to motivate students to learn," and "They also enable educators to assess important competencies and aspects of thinking in contexts and through activities that students care about in everyday life" (U.S. Department of Education, p. 37). Games and simulations promote a broader, multimodal definition of literacy (Gee, 2003), one necessary to compete in the modern world.

Finally, effective game play and design in the context of a meaningful project offer a means towards future employability as they advance skills such as: communication, teamwork, collaboration, problem-solving, organization and analysis (Klopfer, Osteweil & Salen, 2009) as well as encouraging reflective and creative practices (Hill, Morton, Lawton, & Hemingway 2007).

A SCHOOL DISTRICT CULTURE SUPPORTING INNOVATION

Building a culture of understanding and participation with digital media and learning was instrumental in establishing support for this innovative gaming curriculum. Within the Oconomowoc Area School District case described in this paper, the Horizon Reports, ISTE standards and Jenkins et al., "new media literacies" directed technology planning; the year before Elements of Game Design was formally proposed, ongoing discussions surrounding game-based learning occurred during on-site graduate courses, administrative, and instructional technology meetings. The district administrative team read *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (Christensen, Horn & Johnson, 2008), excerpts of *Rethinking Education in the Age of Technology* (Collins & Halverson, 2009),