

Chapter 23

Design–Researching Gamestar Mechanic: Integrating Sound Learning Theory into a Game about Game Design

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ABSTRACT

This chapter presents the results of a three-year design research study of Gamestar Mechanic, a multiplayer online role-playing game designed to teach middle school children to think like designers by exposing them to key practices behind good computer game production. Using discourse-based ethnographic methods, it examines the ways in which the multimodal meaning representations of the language of games (Gee, 2003) provided within Gamestar Mechanic, have helped learners think and communicate in increasingly sophisticated ways with and about game design. It also examines the implications of these language and literacy skills for other areas of players' lives, as well as for the improvement of the game as a learning environment over time.

INTRODUCTION

This chapter presents the results of a three-year design research study of *Gamestar Mechanic*, a project's whose goal has been to produce, deploy, and assess a game-based learning environment intended to foster the adoption by middle school children of a designer mindset. Such a mindset involves a set of language and literacy skills involving digital media that a growing number of scholars recognize as fundamental to learners in the 21st century (New

London Group, 1996; Perkins, 1995; diSessa, 2002; Partnership for 21st Century Skills, 2006). The game aims to achieve its curricular goals through an online multiplayer role-playing game experience that places learners in the role of game designers (Games, 2008; Salen, 2007).

The chapter begins by presenting the background of the project, its initial aims and the learning theory upon which it was built. It then presents the design research methodology used in its production, and discusses how the core findings in each of three research phases contributed to its improvement as a game-based learning environment. It concludes

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with a discussion of its implications for learners outside of games, and for educational practice.

Background: The Aims and Learning Theory behind a Game about Making Games

Since its inception, the core objective of Gamestar Mechanic has been to effectively blend sound learning science theory and good game design principles into a pedagogical intervention. The goal for this intervention would be to help learners from traditionally underserved groups within the U.S. (e.g. minorities, girls), engage with digital technology and develop 21st century language and literacy skills.

Gamestar Mechanic research builds on two decades of educational research involving games for learning. It builds upon the works of scholars such as Seymour Papert, Yasmin Kafai, and other early constructionists (Papert and Harel, 1991; Kafai, 1995), who explored the potential of children designing interactive media using computer-based tools such as the Logo language to foster computer-programming and math skills. It has been substantially informed by recent literacy research involving multimodal systems of meaning representation beyond traditional print literacy (e.g. multiliteracies, New London Group, 1996; new literacies, Knobel and Lankshear, 2006; computational literacy, diSessa, 2002). It also builds on the more recent sociocultural research on games and learning, which proposes that playing and designing videogames can help children develop skills in areas such as language and literacy (Gee, 2003), history (Squire, Giovannetto, Devane, and Durga, 2005), and scientific and professional thinking practices (Steinkuehler, 2005; Shaffer, 2006).

In addition, in order to design the game, the development teams have adopted numerous lessons learned from previous attempts at using game design for learning in both formal and informal environments, many of which also generated

theoretical frameworks that have informed its development over the years (see Hayes and Games, 2008 for a full review of the research)

Playing Gamestar Mechanic: Gamestar Mechanic is, in a nutshell, a game about making games, where players learn to think and communicate like designers by playing, building, and sharing computer games, in a flash-based online environment. The game narrative places players in the role of *game mechanics*, in a fantasy world where people have discovered how to encapsulate well-designed games, and harness their energy to fuel their life-support systems. However, over time different philosophies and approaches to making the “best games” have emerged, and groups specialized in specific game types—schools of gaming—formed. Different philosophies have brought with them rifts between members of different schools, and people got so involved in them that knowledge of how to make high yield games was lost.

As a consequence, the factories that once produced high-energy games have fallen into disrepair, the games they made but ghosts of what they used to be. Unfortunately, the schools have reacted to the energy crisis by adopting more radical postures, and require all their members to strict adherence to their philosophy. Players enter the world by choosing avatars, characters that represent new recruits of one of the schools of gaming, and who strive to become true mechanics by learning the core principles of game design espoused by their school (Figure 1).

According to Gee (2003), a central way in which games can encourage powerful learning experiences is by allowing players to take on and play with different *identities*, and explore their possibilities within the virtual world of the game. In role-playing games such as *World of Warcraft*, In Gamestar Mechanic, the narrative serves precisely the purpose of situate the players’ decisions in ways that encourage the negotiation between their *real world identity*—and the *virtual identity* of their avatar, with the goal of generating a *projective*

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