Chapter XVI
Using Narrative and Game-Schema Acquisition Techniques to Support Learning from Educational Games

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ABSTRACT

The first part of this chapter explores how narrative can be used as a cognitive aid in educational video games. It discusses how narrative is currently used in games, and how that modality of presentation, when combined with instruction, is complimentary to the way we comprehend, store, and retrieve information. The second part of the chapter reviews the cognitive prerequisites needed in the minds of players to adequately attend to and leverage the instructional aspects of games. To this end, it offers suggestions for how to instill a functional game-schema in the minds of novice players so that they can be productive in the game environment. The focus on the interplay of narrative and game schema construction in this chapter is also meant to serve as a model for a holistic approach to games research in which a game's cognitive prerequisites are explicitly studied alongside the more traditional pedagogical measures.

INTRODUCTION

As of the close of 2006, game usage in the United States continued to soar, not only among the traditional gamer demographic (i.e. teenage boys), but among all age groups from infants to senior citizens. According to The Nielson Company's Fourth Quarter 2004 Video Game Console Usage Report (The Nielson Company, 2004), almost 94 million Americans played a console video game for one minute or longer between Sept. 18th and Dec. 31st 2006. Furthermore, during any given minute of that 3 1/2 month time period, approximately 1.6 million Americans aged 2 and older were actively engaged with playing a console video game. And from a total usage standpoint, the Neilson report suggests that approximately 52 million males and 42 million females across all age ranges used a video game console at least once during the 4th quarter of 2006.

With such widespread adoption in our society, video games are beginning to change the nature of entertainment – from that of individuals being passive consumers of media to people becoming more active participants in the shaping of their amusement. Among kids in particular, this societal transformation arguably raises the bar of student expectations and capabilities when it comes to interacting with information presented in the classroom. As educators, we must not only acknowledge the existence of such changes, but must make concerted efforts to leverage potential learning opportunities afforded by the use of breakthrough game engine technology.

However game engine technology is becoming increasingly complex, and the notion of game-play and engagement can vary widely across different genres of games. Indeed the very notion of a video game nowadays has become a vague generalization, evoking images of 1st person style shoot-em' up gore in the minds of some, while for others the term evokes images of solitaire or 3-D Tetris.

When exploring the potential benefits video games offer to learning and instruction, the gaming literature is surprisingly vague in distinguishing one type of game genre from another. Unsuspecting readers may easily be led to believe, for example, that findings concerning motivation and engagement from the use of a 2-D puzzle game to help students practice their multiplication times tables would be applicable in predicting motivation and engagement for students playing a 3-D role-playing game that endeavors to teach global economic commerce among warring nations. Despite the fact that these two environments are regarded as video games, their relation to one another is practically non-existent. At best, any similarities found between the two could arguably be regarded as mere coincidence.

When discussing the educational nuances of games, we need to break the tendency of speaking in generalities concerning video games, and instead focus our discussions on the myriad sub-genres of video games that exist so that we can more accurately make "apples-to-apples" comparisons. Indeed, the cognitive aspects associated with playing a 2-D puzzle game are arguably very different from those associated with a 3-D role playing game.

With that said each sub-genre of the video game family offers its own potential benefits to learning and instruction, as each involves subtle differences in the way players interact in the game-playing experience. As educators, we ought to begin to examine the nuances of interaction associated with each genre of game-play and identify how those interactions can be married to sound instructional design in order to develop innovative, next-generation learning experiences.

Although research specific to how interactivity in *games* relates to learning is scarce, there is evidence to suggest that providing students with the ability to physically interact and/or manipulate objects in an instructional realm may help improve their recall of the experience. Engelkamp (1998) described this phenomenon as the "enactment effect". His research has shown that when asked to recall certain action phrases (such as "bend