Developing Serious Pedagogy for Serious Games: Digital Game-Based Teaching in K-12 Schools

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INTRODUCTION

For some time now, educators and educational theorists have recognized the increasing importance of the acquisition of technology-based competencies to a generation of children for whom the ability to read and write print text is only one of several literate skills required for participation in a globalized, digitally mediated society (Alvermann, 2002; Buckingham, 2003; Lankshear & Knobel, 2006; Snyder & Beavis, 2004). Likewise, digital games have become centrally important to the developing competencies that many see as central to 21st century citizenship (Galarneau & Zibit, 2006; Jenkins, 2009; Prensky, 2006; Watts, 2009), representing a radical departure from the predominantly text-based literate traditions that have defined and guided formal curriculum, pedagogy, and evaluation (de Castell & Jenson, 2003). As Gee (2003, 2007), de Zengotita, Avrich, Koster & Johnson (2006), Kafai (2010), and Rieber (1996) have demonstrated, among others, digital play both depends on and develops players' abilities to identify, assimilate and respond to significant information in a variety of non-propositional forms.

While there has been much enthusiasm and acclaim for the purported cognitive, social, motivational, and health-related benefits of digital play, the evidence for these claims, and the capacity to reproduce the same or similar outcomes with regards to digital play across contexts, have not been as forthcoming. As Linderoth (2012) aptly points out, "the matter of games and learning needs to be seen primarily as an empirical question" (p. 58). In a field where the 'canonical' research often lacks an empirical

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basis (Gee, 2003; 2009; Prensky, 2005; 2007), the gap between claims and evidence remains a stubborn and urgent problem. Empirical evidence is also notably absent in the area of digital-game-based pedagogy in K-12 classroom spaces. While some researchers have examined the use of games in the classroom, these studies often focus on teachers experiences using or bring introduced to games (Allsop & Jessel, 2015; Becker, 2007; Chee, Mehrotra, & Ong, 2014; Hanghoj & Brund, 2011), the content of game-based lessons or units (Annetta, Murray, Laird, Bohr, & Park, 2006), experiences using technology in discipline-specific contexts (Brysch, Huynh, & Scholz, 2012; Chee, Mehrotra, & Liu, 2013) rather than on explicit, pedagogical strategies teachers can employ. As Van Eck (2006) makes clear, given that digital games "require pedagogical approaches that will be unfamiliar to many faculty members, pedagogical support should be provided to those interested in exploring DGBL" (p. 28).

Acknowledging the persuasiveness of general arguments for serious uses of 'serious games', this research project addresses a need for a deeper understanding of how teachers can be practically supported in the use of digital games in the classroom, focusing specifically on developing teaching strategies by way of professional development, and guided support. In this paper, we outline the particular pedagogical strategies found most effective for digital game-based learning in K-12 classrooms.

IMPLEMENTING VIDEOGAMES IN THE CLASSROOM

This project centered on the use of *Sprite's Quest*, an online iOS and browser-based game targeted at grade 7 and 8 students to support physical geography topics and concepts. 34 teachers and their classes in the province of Ontario participated in the study, and researchers visited each classroom at least twice. This paper focuses on the ways in which the game was implemented by teachers in these diverse sites, rather than on the student experience. Here we rehearse the three themes that we developed from the observational data from classroom visits and interviews with each of the teachers. First, in classroom environments that meaningfully integrated the game, tasks centered on game content rather than technology. While most teachers in this group used electronic platforms such as Google Classroom as a component of their *Sprite's Quest* lessons specifically and physical geography units generally, the platforms were positioned as tangential to the content. For example, teachers might remind students that an activity should be completed and submitted for evaluation through Google Classroom or they might demonstrate submission techniques through a brief modeling activity, but the game and learning activities remained the point of focus. In situations where technology failed to function properly, troubleshooting took place quickly and effectively while the learning task was positioned as the focal point for students.

Second, classrooms that integrated game play into a curriculum that was also structured and focused typically asked students to collect facts while they played and/or to pay attention to particular items or objects while working through the game. This more directed play also translated into accountability for learning during play, with students often asked to submit artifacts such as jot notes as evidence of learning at the end of game play. More often than not, students were required to complete more than one task per period or were given multiple tasks to work on if a single task had been completed.

Finally, classroom contexts where game play was well supported and integrated, teachers were engaged in game play, demonstrating knowledge of the game and speaking with students about their own experiences and their students' experiences while playing the game. Engagement also extended to game-based learning, with teachers regularly checking in with their students by circulating during game play to ask questions, including those connected to learning and the follow-up activities. Consequently, students in these environments were often on task.

This paper demonstrates the need for more diverse research on game-based learning to guide the deployment of digital games in formal, classroom learning contexts. It also contributes to a re-conceptualization of the practical experiences, including the everyday realities and struggles relating to using videogames in the classroom. With respect to teacher training, much more work is needed to ensure that teachers conceptualize videogame use in the classroom in a manner that is productive to and impactful for learning: as tools that exist as part of a larger nexus of educative texts and around which a comprehensive curriculum can be developed.

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