

Chapter 8

Making Learning Fun: An Investigation of Using a Ludic Simulation for Middle School Space Science

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ABSTRACT

We examine the use of a ludic simulation designed for middle school space science to support students' learning and motivation. A total of 383 sixth graders and 447 seventh graders participated in this study. The findings showed that sixth- and seventh-graders perceived the simulation as having substantial ludic characteristics and educational value. The results indicated that having a playful experience is important for this age group and that participating in a ludic simulation can help motivate students to learn school subjects. Results also indicated that incorporating ludus into the learning experience can improve students' attitudes toward the subject matter. Implications of policy, research, and practice with regard to using ludic simulations to support classroom-based learning were discussed.

INTRODUCTION

Increasing interest in digital games within popular culture has led many to consider the effects that playful or ludic simulations can have on learning. With the advent of mobile devices with gameplay functionality, children also play games for longer periods of time, with mobile phone gamers now playing over two hours per day, an increase of 57% in two years (NPD Group, 2015). With such an explosion of interest in the ludic value of digital media, in this chapter we describe a ludic simulation designed for middle school space science and highlight previous and emergent research findings that can help us better understand the value of ludic simulations in education. To this end, we will proceed by first

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presenting a brief overview of previous research studies conducted on the simulation and then explore some intricacies of students' ludic experiences within it. In so doing, we hope to provide valuable insights to educators interested in the topic.

THEORETICAL FRAMEWORK

Considerations of the pedagogical value of *ludus*, or play, dates back at least two thousand years to Platonic and Aristotelian aesthetics (Mosca, 2013) and also feature prominently within constructivist metatheory, having been of interest to both cognitive constructivists (Piaget, 1951) and social constructivists (Vygotsky, 1978). In recent years, the topic has received renewed attention (cf. Singer, Golinkoff, & Hirsh-Pasek, 2006), and ludic elements have been utilized to teach everything from training first responders in explosive blast incidents (Waddington et al., 2013) to critically examining historical causes of war (Iglesia & Luis, 2016) to reminding family members to complete chores (McGonigal, 2011). Even without explicit learning objectives or immersion in unfamiliar experiences, ludic play may also serve as a means for reimagining and re-envisioning the mundane by introducing pleasure into the ordinary (Iversen, 2014). At early stages of development, children engage with the world and people around them through playful interactions that allow them to learn by imitation, symbolic interaction, and cognitive representation, thereby constructing experiential knowledge about the world (Piaget, 1951) or mimetically replicating it (Mosca, 2013). As a result, play for children is "an engaging and deliberate activity to which they devote great effort and commitment" (Rieber, 1996, p. 44), and out of such play, children can develop deep and important understandings. Current research in a variety of fields suggests that "play is an important mediator for learning and socialization throughout life" (Rieber, 1996, p. 44; see also Csikszentmihalyi & Bennett, 1971) and that the principles of play can be effectively used to teach learners of all ages.

With the introduction of digital technologies, researchers were empowered to think about play in new and innovative ways, and digital games as a method of play have become commonplace amongst consumers on computers, game consoles, and mobile devices. In 2009, it was reported that 42 percent of U.S. homes had a game console (Ivan, 2009), and it has been recently estimated that 78% of teens own a cell phone and that most own a portable gaming device or music player (Pew Research Center, 2013). With the ubiquity of these devices, Internet-based social networking technologies and new content distribution platforms such as Valve Corporation's Steam (2003) and Apple's App Store (2008) have enabled the growth of new popular methods of digital gaming like massively multiplayer online games (MOOG's), casual games, mobile games, and social gaming.

This rapid growth and the prevalence of digital games in our culture have led many to consider the questions we might answer and the problems we might solve through play. McGonigal (2011), for instance, argues that games in today's society "are fulfilling *genuine human needs* that the real world is currently unable to satisfy" and that games, if properly harnessed, have the potential to address real-world problems. Current gamification or ludification movements agree with this stance and hold that a "new ludic system" is arising in conjunction with a variety of ludic social phenomena (e.g., the video game industry, theme parks, etc.). Ortoleva (2012) explains that this "new ludic system would not exist without thinking machines, to which we owe a great variety of playful practices, from video games to casual games, to those peculiar games that are social networking websites," and in the words of Fuchs (2012), "we have a society with a 'high lusory attitude' ... in using these ludic interfaces [e.g., digital games], we increasingly turn work, war, sport and health into gamified processes." Focusing on specific

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