A Critical Review of the Effectiveness of Narrative-Driven Digital Educational Games

Luke Conrad Jackson, Deakin University, Geelong, Australia
Joanne O’Mara, Deakin University, Geelong, Australia
Julianne Moss, Deakin University, Geelong, Australia
Alun C. Jackson, Melbourne Graduate School of Education, University of Melbourne, Melbourne, Australia

ABSTRACT

Digital games are currently viewed, by many within the field of education, as a way to engage and motivate students, and to assist them in acquiring content knowledge and skills. Despite the growing interest in using digital games, including serious games, this is the first critical review of the literature on the effectiveness of digital narrative-driven educational games. Of 2550 articles initially screened, 130 were synthesised in the final review. The results suggest that such games can be more much more effective than traditional instruction for promoting attitude change, engagement, motivation, and skill acquisition; slightly more effective in promoting enjoyment and knowledge acquisition; and equal in fostering behaviour change. As such, they may be viewed as effective and versatile tools for teaching and learning.

KEYWORDS

E-Learning, Empathy, Media In Education, Multimedia/Hypermedia Systems, Narrative Immersion, Pedagogical Issues, Simulations, Student Engagement, Virtual Reality

INTRODUCTION

At the turn of the 20th Century, Sigmund Freud (1908) noted that “The child’s best-loved and most intense occupation is with his play or games” (p. 421). For Bettelheim (1987), play permitted the child “… to resolve in symbolic form unsolved problems of the past and to cope directly or symbolically with present concerns. It is also his most significant tool for preparing himself for the future and its tasks” (p. 170). Human beings play in structured and unstructured ways. Our earliest play is often unstructured, with items found at hand, with rules improvised to promote fun and social cohesion. In this way, we learn how the world works, and better understand our role in it (Brown, 2009). Structured games have existed for millennia, during which time they have taken on many guises, from the athletic games of the Ancient Greeks to board games, card games, children’s games, and – most recently – digital games.

Such games, once maligned within classrooms for their perceived potential to encourage violent behaviour (Anderson, 2004; Anderson & Bushman, 2002) and addiction (Griffiths, Davies, & Chappell, 2004), are now viewed by many in a more favourable light. James Paul Gee, one of the best known and most widely cited proponents digital educational game research, suggests that digital games, when well-constructed, offer the player/learner information on demand, just in time, and within a context that they care about (2003). Good games, he suggests, present problems in a logical
order, and allow the player to develop increasingly complex skills through an ascending process of challenge and mastery, a process that he likens to the development of expertise in any domain. Gee (2011) has written, also, about the role of narrative in commercial and educational games. He argues that it is by walking in the shoes of the story’s central character that the player can develop empathy as well as the ability to critically reflect upon their own behaviour in real life. In this process, such games have the potential to encourage the player to explore, engage in personal meaning-making and play with social boundaries (Shaffer, Squire, Halverson, & Gee, 2005).

Despite the rising number of studies that have sought to explore the effectiveness of digital educational games, a large-scale review has not yet been undertaken to synthesise what is known about the effectiveness of one of these games’ most potentially powerful facets: narrative. This review seeks to address this gap in the literature.

**Key Definitions**

For the purposes of this review, a ‘game’ is defined as “… a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome” (Salen & Zimmerman, 2004, p. 83). A ‘digital educational game’ refers to a game produced for dissemination via a digital device for the purpose of educating the player. For a game to be considered narrative-driven, it must contain all six aspects of narrative as defined by Chatman (1980): events, character/s, setting/s, structure, point of view, and time. ‘Effectiveness’, within this critical review, refers to the various educational measures used by researchers as they attempt to discover whether a game has achieved its desired educational outcome, be that the acquisition of knowledge and/or skills, and/or attitude or behaviour change.

**REVIEW OF LITERATURE**

Many researchers and authors strongly believe in the potential of digital educational games to foster knowledge transfer, skill acquisition, and attitude or behaviour change, while others have argued for their effectiveness in term of engagement, motivation, and enjoyment over traditional curricula. However, gaining a consensus on their effectiveness is difficult. Examining meta-analyses, systematic and critical reviews of the scientific literature reveals a field in flux: publications are proliferating quickly (Boyle et al., 2016), yet there are suggestions of publication bias (Sitzmann, 2011). The application of different standards for study design and measurement continue to present problems for those who wish to compare cases (All, Castellar, & Van Looy, 2013; Ke, 2009; Tobias, Fletcher, Dai, & Wind, 2011; Young et al., 2012; Young, Slota, & Lai, 2012). These findings prompted All, Castellar, and Van Looy to design a set of guidelines which, they hope, will be used to standardise research on the effectiveness of digital games in future (All, Castellar, & Van Looy, 2016). Similarly, Clark, Tanner-Smith, & Killingsworth (2016) have called for game researchers to provide “thicker descriptions” of game-based interventions, to allow for more informed assessments to be made of the effect of various game elements.

**Games and Narrative**

Abdul Jabbar & Felicia (2015) investigated the link between engagement and two separate variables: role-play and narrative. A number of studies within their review suggested that role-play was an effective way of achieving immersion in the game, and that by playing the role of another person within the game students were better able to develop a sense of responsibility. Of the nine studies which addressed the use of narrative, the majority found that narratives helped students to relate to the situations and characters depicted in the game, which led to higher levels of understanding and the motivation to complete a greater number of missions. They also referred to the potential for narrative to grab and hold the player’s attention, increasing their engagement with the learning materials and
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