Chapter 82
The Applicability of Gaming Elements to Early Childhood Education

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ABSTRACT

Many educators and technology developers advocate the use of gamification in educational environments. However, it is important to evaluate the applicability and value of gaming elements to the environments in which they are being implemented. Early Childhood Education (ECE) presents a unique educational context framed by national curricula and philosophical approaches that influence the adoption of technology, and therefore, gamification as an approach to enhancing learning through intrinsic motivation and engagement. This chapter evaluates the applicability and value of gaming elements to the use of technology in Early Childhood Education (ECE). Various definitions of gamification, particularly in the context of education, are considered. Six tenets of ECE and the concept of play are explored to inform an analysis of the appropriateness of gaming elements to ECE.

INTRODUCTION

This chapter evaluates the applicability and value of gaming elements to the use of technology in early childhood education (ECE). The chapter will firstly discuss gamification and consider the various definitions and understandings of the concept, particularly in the context of education. The chapter then provides an overview of ECE, including various national curricula and the two dominant philosophical approaches to ECE. Six tenets of ECE and the concept of play are explored. Using Knewton's (2012) popularised Infographic 'The Gamification of Education', each of the elements of gaming are considered in relation to ECE, and the relevance of gamification in ECE environments is evaluated.

GAMIFICATION

Defining the Concept

Gamification has become a popular practice in many contexts, including enterprise, health, education, advertising and the military, with varied levels of acceptance and success (Deterding, Dixon, Khaled, & Nacke, 2011). Despite widespread discussion and application of gamification, and broad agreement on many key aspects of the concept, there is no single definition agreed by both practitioners and researchers (Erenli, 2012).

Even within a single context such as education, definitions vary (Muntean, 2011). The many definitions of games and gamification, and the embedded characteristics of some of these definitions, were considered in the context of learning by Erenli (2012). Based on a review of the literature, the following definition of gamification within the context of education was proposed (Deterding, Dixon, Khaled, & Nacke, 2011, p.10): "Gamification is the use of game elements in contexts that had originally no link to game related elements" (Erenli, 2012).

Kapp (2012) noted the importance of defining the basis of gamification (i.e. the 'game') in the context in which the game is 'played', and therefore the context in which the gamification is applied. The importance of context is supported by the work of Tootell et al. (2013) which considers the need to examine the use of any technology within its social context of use, linking this to the critical theory idea of 'lifeworld' (Habermas, 1984). Kapp defined a game in a learning context as "a system in which players engage in an abstract challenge, defined by rules, interactivity, and feedback, that results in a quantifiable outcome often eliciting an emotional reaction." (2012, p.7) and hence defined gamification as "using game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning, and solve problems." (2012, p.10)

Gamification in Formal Education

The ability for integration of elements of gamification into learning experiences is enhanced with increased availability of natural user interface technologies such as iPads and interactive whiteboards, with over 1.5 million iPads already in use in educational programs worldwide (Tootell, et al., 2013). Despite this widespread availability of such technologies, the need for appropriate teacher training to maximize the usefulness of the devices has been highlighted (Beeland, 2002; Glover & Miller, 2001; Kaufman, 2009; Smith, Higgins, Wall, & Miller, 2005) and presents a challenge for both educators and educational institutions.

Given that the percentage of Internet users who engage in social gaming is continually increasing, the impact of games and gamification will be significant in the lives of today's youth. There was an estimated 118.5 million social gamers in the US and UK in 2011 (an increase of 71% based on the same report in 2010) (The Guardian, 2011), and it is estimated that over 70% of Global 2000 organisations will have at least one gamified application by 2014 (Gartner, 2011). A clear understanding of the concept of gamification is therefore essential for educators as they seek to connect more closely with learners and provide them with learning experiences that are aligned with future career opportunities.

This paper will consider whether this high level of engagement with games can be leveraged to enhance learning outcomes in early childhood education (0-6 years) by analysing the characteristics of gamification and comparing these to desired learning outcomes of ECE.

The use of games for learning is not new, with three types of games identified for reaching educational goals in a more engaging way: classic edu-tech or edutainment games, games developed by students themselves and gamified courses (Klopfer, Osterweil, & Salen, 2009; Muntean, 2011).

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