

Accepted Manuscript

A systematic literature review of games-based learning empirical evidence in primary education

Thomas Hainey, Thomas M. Connolly, Elizabeth A. Boyle, Amanda Wilson, Aisya Razak



PII: S0360-1315(16)30156-7

DOI: [10.1016/j.compedu.2016.09.001](https://doi.org/10.1016/j.compedu.2016.09.001)

Reference: CAE 3061

To appear in: *Computers & Education*

Received Date: 18 January 2016

Revised Date: 2 May 2016

Accepted Date: 8 September 2016

Please cite this article as: Hainey T., Connolly T.M., Boyle E.A., Wilson A. & Razak A., A systematic literature review of games-based learning empirical evidence in primary education, *Computers & Education* (2016), doi: 10.1016/j.compedu.2016.09.001.

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A Systematic Literature Review of Games-based Learning Empirical Evidence in Primary Education

Abstract

Games-based Learning (GBL) has developed a reputation with educationalists it is perceived as a potentially engaging form of supplementary learning that could enhance the educational process and has been used at all levels of education including primary, secondary and tertiary education. Despite this recognition and utilisation there is still a lack of empirical evidence supporting GBL as an approach. This paper presents the findings of a systematic literature review performed from 2000 to 2013 specifically looking at quality empirical studies associated with the application of GBL in Primary Education (PE) categorising studies into: behavioural change, affective and motivational outcomes, perceptual and cognitive skills and knowledge acquisition and content understanding. This paper presents a synthesis of these high quality studies associated with GBL. The studies showed that GBL have been used to teach a variety of subjects to children and young people in PE with mathematics, science, language and social studies being the most popular. However, the analysis shows that more Randomised Controlled Trial (RCT) studies should be performed comparing GBL to traditional teaching approaches to ascertain if GBL is a useful, viable teaching approach at PE level; there is a distinct lack of longitudinal studies and further longitudinal studies are required; further studies are required looking at whether there are pedagogical benefits of using 2D or 3D games at PE level to assess if 3D immersive games are indeed necessary; further studies are also required to perform comparisons between single and collaborative play and to identify the pedagogical benefits.

Keywords: serious games; games-based learning; systematic literature review; empirical evidence

1. Introduction

Despite the increased popularity of GBL, there is a lack of empirical evidence to support its validity. Addressing concerns Connolly *et al.* (2012) undertook an extensive systematic literature review of empirical evidence about the positive impacts and outcomes of computer games and GBL with respect to learning and engagement. It examined papers published between January 2004 and February 2009 which reflected the growing interest during that time in the use of digital games for learning and behaviour change. The papers identified were very diverse with respect to the phenomena researched, the purpose of the studies, the underlying theoretical models and methodological approaches adopted. A key aim of Connolly's review was to develop a workable framework for categorising digital games and their outcomes. A multi-component analysis of games and their outcomes was advocated distinguishing games in terms of game genre, i.e. the kind of games

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