

# Chapter 1

## How Game-Based Learning Works and What It Means for Pupils, Teachers, and Classroom Learning

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### **ABSTRACT**

*This chapter discusses the results of a systematic literature review, a needs analysis through a pupil survey, and a case study of classroom observations in the context of primary education. The results of the overall findings, limitations, underlying issues, and emerging concepts are associated to how game-based learning (GBL) works and what it means for pupils, teachers, and classroom learning. This chapter presents the main contributions to the body of knowledge in GBL study, while offering best practice recommendations for designing engagement in GBL. This in turn outlines a framework of how GBL may work in the classroom. The framework identifies elements, features, and factors that shape how engagement occurs and how learning progresses in gameplay within GBL environments.*

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## **INTRODUCTION**

This chapter focuses on how game-based learning (GBL) provides opportunities for gameplay and how pupils choose to engage in curriculum content, gaming elements, and activities with the support and guidance provided through teachers, peers or in-game resources. The study investigates elements in games that provide pupils opportunities to engage within the gameplay created in the GBL, and how these elements create engagement and affect learning and motivational outcomes.

The growing access and use of digital technology in early age children (Gee, 2007; Prensky, 2002, 2005), and the searching for digital resources as means of digital literacy or expertise (Helsper & Enyon, 2009) initiated the web-based or online education. Through web technology, developers display and deliver digital content to support learning of vast curricular topics (Whitworth & Berson, 2003). However, web-based learning feeds pupils with information instead of engaging pupils to build their own knowledge from seeking, acquiring and retaining information (Ayad & Rigas, 2010). In addition, studies on how multimedia technology can support and enhance teaching and learning practices (Kazanki & Okan, 2009; Raffle et al., 2010), resulted a wide range of entertaining digital learning programmes. Instructional designers should know how to manipulate and integrate learning principles and engaging gaming components to produce integrated GBL products and services on self-regulated learning platforms (Chen et al., 2012; Dickey, 2005; Walters & Taylor, 2012). Likewise, educators should balance entertainment and learning in the classroom (Rusu, Russel, Cocco, & DiNicolantonio, 2011).

When showing the use of digital resources and formats in GBL practices (Clark, Tanner-Smith, Killingsworth & Bellamy, 2013; Connolly et al., 2012; Wastiau, Kearney & Van den Berghe, 2009; Young et al., 2012), digital GBL assumes that digital gaming is an engagement ‘phenomenon’ (Chaudary, 2008) that could bring ‘novel’ experience to learners (Hsu, Wu, Huang, Jeng, & Huang, 2008), which is ‘better’ at promoting learning to the digital native generation (Arnab et al., 2012; Gee, 2008; Prensky, 2002, 2005). However, existing literature shows few effective GBL programmes (Girard, Ecalle, & Magnan, 2012), and fewer appropriate bespoke games for schools (Lieberman, 2010). Similarly, as Pivec (2007) emphasises, “primary education games have a high presence in non-formal and informal segments of our learning” (p. 387). Although there are positive implications of digital gaming and GBL (Papastergiou, 2009; Przybylski, Rigby, & Ryan, 2010; Chen, & Huang, 2013), and the implication is maturing rapidly and tremendously while gaining increasing importance (Akilli, 2007; Pivec, 2007; Wu, Hsiao, Wu, Lin, & Huang, 2012; Oprins, Visschedijk, Roozeboom, Dankbaar, Trooster, & Schuit, 2015; Davidson & Candy, 2016) in education and training, some would insist reasoning that positive outcome is not always the case of GBL.

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