

# Chapter 12

## A Systematic Review of Gamification Within E–Learning

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### ABSTRACT

*The focus of this study was to review and evaluate the effectiveness of gamification within e-learning platforms. The study deployed systematic literature review methodology to evaluate how effective gamification has been used within e-learning platforms. The study used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Approach (PRISMA), starting with 366 articles, shifting to a final 34 articles for consideration. It was established that gamification positively influences and enhances learning within the e-learning platform. Therefore, the study recommends policy makers, designers, and implementers of e-learning platforms to consider incorporating gamification elements in order to increase user motivation and engagement for enhanced learning.*

### INTRODUCTION

Play has been recognized and acknowledged as an integral component in cognitive development and learning (Plass, Homer, & Kinzer, 2015). Indeed, Piaget (1962) elaborates the role and manifestation of play as children mature through different developmental stages. In the modern day, play takes many forms, including Video play and digital games. Advantages of video games in education outlined by Domínguez et al. (2013) are immediate feedback, provision of information on demand, productive learn-

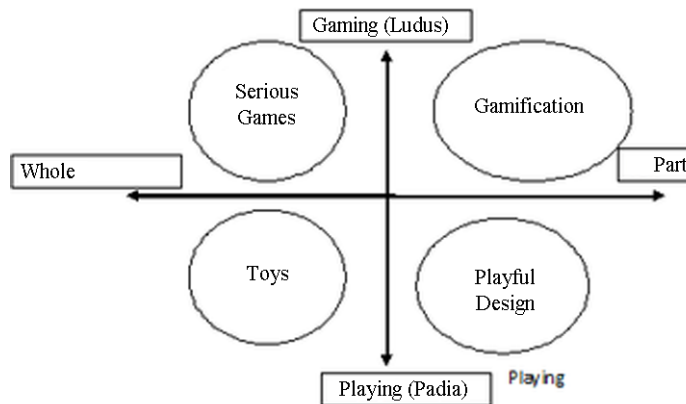
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ing, generation of expertise, self-regulated learning and collaborative learning activities. These allow for transfer of knowledge and skills, hence enable learning and assessment. Further benefits as enumerated by Granic, Lobel, & Engels. (2014) and Plass, Homer, & Kinzer (2015) from video games are cognitive, motivational, emotional and social development not forgetting that game-based learning as well promotes motivation, establishes learner engagement and provisions for graceful failure.

Despite these benefits of playing digital video games, early studies which focused on negative impact revealed the challenges of increased aggression particularly those from playing games which were violent in nature, decreased pro social behaviour, inability to regulate the amount of time spent on games and ill health due to head mounted gear (Seaborn & Fels, 2015). Overall, computer games offer an active, experiential, situated and problem-based learning environment well suited for the learners' development (Soflano, Connolly et al. 2015).

Games have been actively deployed in teaching and learning as game-based learning, serious games and gamification as shown in the taxonomy in Figure 1.

Figure 1. Taxonomy of games (source: Deterding, Sicart, Nacke, Kenton and Dixon (2011))



The taxonomy of games presented in Figure 1 provides a distinction that gamification is distinct and separate from serious games and video games.

In the taxonomy, the key axioms are *wholeness* of the game and *rules* that constitute the game. The upper part of the model refers to those games that are governed by rules (Ludus) while the lower part focuses on those that are without rules (Padia). Those on the left side are fully incorporated games with all gaming features as expounded by the mechanics, dynamics and aesthetics (MDA) framework and the right side are games bearing limited elements. The Key distinction of serious games (SGs) and gamification is that SGs are '*games primarily focused on education rather than entertainment*' but costly in development and implementation. Gamification offers a reprieve, as it still provides the gaming experience through use of game design elements at a reduced cost and implementation delay.

Various researchers have given working definitions for gamification. Deterding, Sicart, Nacke, Kenton & Dixon (2011) define gamification "as the use of game design elements in non-game context ". They opine that gamification is distinct and separate from serious games and video games. Lee & Hammer (2011) examine gamification as the use of game mechanics, dynamics, and frameworks to promote desired

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