

# Chapter 15

## Playful Education and Innovative Gamified Learning Approaches

**George P. Pavlidis**

*Athena Research Centre, Greece*

**Stella Markantonatou**

*Athena Research Centre, Greece*

### ABSTRACT

*In the recent decades, there has been a significant investment in the incorporation of games in the educational practice. This has taken either the form of game-based learning or serious gaming. A literature review on gaming and education results in numerous works tackling different aspects of the approach. Even a simple search on the Web on gaming and learning produces multi-million results. In this work, we try to touch not only the surface of this approach and provide typical game-based learning evaluation results but also to explore its inner workings (offering a modest mixed philosophical and science aspect) and to provide an even more concrete foundation for a playful education.*

### INTRODUCTION

Playing is an archetypical activity that arises from primordial biological structures existing before the conscience or the capacity for speech; it is not something a person decides to do (Brown & Vaughan, 2010). According to the same study, playing is an activity with specific qualitative features such as (a) it is seemingly pointless, (b) it is voluntary, (c) it is genuinely attractive, (d) it disconnects from the sense of time, (e) it reduces self-consciousness, (f) it enhances improvisation, (g) it creates a desire to go on and on. In addition, playing could include (a) anticipation, (b) surprise, (c) entertainment, (d) understanding, (e) power and (f) balance. From the perspective of neuroscience, several works have emphasized the value of play in the development of the brain. It has been many year now that neuroscientists like Sergio Pellis and Andrew Iwaniuk along with biologist John Nelson in their research (Iwaniuk, Nelson, & Pellis, 2001; Pellis & Iwaniuk, 2002) discovered strong positive association between the size of the brain with the propensity to play in mammals, in general. In addition, Panksepp (see for example in Gordon, Burke, Akil, Watson, & Panksepp, 2003) has shown that participation in playing selectively activates

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a brain derived neurotrophic factor in the amygdala and in the dorsolateral prefrontal cortex. Near the ending of the twentieth century, Byers (Byers, 1998; Byers, 1989; Byers, 1999), in his research on animal play, speculated that during play, the brain creates a sense of self, through simulation and testing. Play essentially helps in the formation of the brain. While playing the brain is able to experience situations without threatening its physical or emotional integrity. In addition, in as early as 1964, Diamond, Krech, & Rosenzweig (1964) reported the development of rats with larger and more complex brains using play. According to Brown & Vaughan (2010), while playing new cognitive combinations are being created using fantasy, in a way in which a complex brain attempts to self-develop and interpret the world.

Play, in all those researches, seems to emerge as a simulation mechanism in the brain of many species (not only humans). A question naturally emerges from this insight: if playing is a simulation mechanism what is being simulated? An easy answer would be the world, as perceived by each one. According to Metzinger (2009) and his work on the ego and consciousness, there is an objective world out there, but as we try to make sense of it using unconscious filtering mechanisms, we are creating our own interpretation of the world, our own reality tunnel. We are never in touch with the objective reality, as those filtering mechanisms (senses, the brain, experiences and hypotheses) prevent us from seeing the world as it is; we only see what can be seen through the reality tunnel we construct in a process that is totally transparent (invisible) to us. We know the world using reflections, since a (correct) reflection is ultimately what we call knowledge. Each one lives in a virtual or artificial world, with the conscious experience being a virtual reality (or maybe better, a simulation) created by nature as a real-time and ever operative world model that supports the interaction between living organisms. In this world model, the ego is nothing more than a pointer on a space-time map, putting a self on the stage of time and space that defines the now and the where.

Counter to our intuition, according to these and other researches, we seem to be living in a simulation created by our brain and we use play to simulate additional possible realities (virtual, alternative realities) in a protected manner, without even noticing it. So, play could be envisaged as a tool to explore potential realities in an attempt towards understanding of the world and towards self-discovery and self-development. This line of reasoning supports a conclusion that play can become an invaluable tool in education, not only because studies have already highlighted so, but mainly due to the nature of the inner workings of the process of play, towards the self-development and the acquisition of knowledge and understanding of the world.

In the contemporary terminology, the trend towards the integration of play, educational activities and technology is usually summarized as gamification, which connects to a sizeable body of existing concepts and research in human-computer interaction and game studies, such as serious games, pervasive games, alternate reality games, or playful design. The idea of using game design elements in non-game contexts to motivate and increase user activity and retention has rapidly gained traction in interaction design and digital marketing (Deterring, Dixon, Khaled, & Nacke, 2011). Additionally, recent research has focused on playfulness, which relates to the creation of a desirable user experience. Although the research has produced a considerable investigation around the term, playfulness lacks an emerged consensual theory or terminology so far, limiting its scope through being largely associated with any pleasurable experience (Costello, & Edmonds, 2007) or fun (Fontijn, & Hoonhout, 2007), or any interaction that goes beyond utilitarian work and task contexts (Gaver, Bowers, Boucher, Gellerson, Pennington, Schmidt, Steed, Villars, & Walker, 2004; Gaver, 2002; Huizinga, 1950), as already pointed out decades ago.

In this paper we investigate gamification, its relevance to gamefulness and playfulness, its historical origins of the term in relation to precursors and similar concepts mainly within the domain of education.

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