

Chapter 51

Ubiquitous Game-Based Learning in Higher Education: A Framework towards the Effective Integration of Game-Based Learning in Higher Education using Emerging Ubiquitous Technologies

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ABSTRACT

The rise of mobile broadband devices and services has significantly changed the role of mobile devices in people's daily lives by enabling the provision of innovative applications and services anywhere, any-time. Despite the fact that new ideas and innovation mainly occur within Higher Education Institutions (HEIs), the adoption of mobile and ubiquitous technologies by HEIs is still in its early stages. This chapter attempts to provide a framework to support Higher Education Institutions towards implementing mobile and ubiquitous, game-based learning activities. Aligned with the objective of this book, this chapter presents some examples and best practices of implementing this framework towards achieving the learning goals of future professionals in the fields of electronic and ubiquitous commerce.

INTRODUCTION

This chapter presents a methodological framework towards the effective implementation of Game-Based Learning (GBL) in Higher Education Institutions (HEIs) using ubiquitous and mobile devices. The proliferation of digital games along

with the effectiveness of game play on cognitive development have sparked a fascination for their integration in the learning process and educational curricula at an international level. A great number of research efforts and applications have been carried out, mainly focusing on the integration of GBL at early educational levels, specifically

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K-12 education (Johnson, Adams, & Cummins, 2012). However, showing consideration for the fact that the population of gamers is continuously increasing, amounting to approximately 70 million people in 2011, 40% of which are aged between 20 and 34 years old, and the fact that all 21st century learners have grown up in a world where digital games have always been an important part of their lives (Johnson, Adams, & Cummins, 2012), it is a great opportunity and a need for HEIs to focus on GBL so as to achieve their goals as regards their students' collaboration, problem solving, critical thinking, creativity and digital literacy skills. Notwithstanding the great number of HEIs including courses for game design and development in their curricula, only few of them apply basic gaming principles to enhance their educational services. GBL practices and methodologies can provide HEI with new forms of learning content, interaction and collaboration, while providing potential for constant evaluation and provision of direct feedback (Derryberry, 2012). Of paramount importance is the proliferation of mobile devices (smartphones and tablets) to further support HEIs towards adopting GBL practices. Specifically, students' ever-increasing use of ubiquitous online applications, when scrutinized within a learning-centered context, provides HEIs with a unique opportunity to easily engage students into game-based learning activities employing their mobile devices as an educational tool.

As a result, HEIs are offered the opportunity to combine two equally popular and effective learning practices (GBL and mobile) and properly integrate them into their curricula in order to enhance students' motivation and engagement, and also achieve demanding learning goals. When successfully applied, this can provide HEIs with a competitive advantage against other globally or nationally recognized HEIs due to the provision of innovative and high-quality learning services to their students.

Conclusively, GBL is expected to become a common practice in HEIs at an international level in two to three years time from now (2014-2015)

(Johnson, Adams, & Cummins, 2012). However, in order for digital games to be effectively integrated in Higher Education, proper methodology and instructional design should be followed during the preparation, delivery and the evaluation phase of GBL activities. To this end, this chapter provides a robust literature review and combines GBL principles and methodologies into a framework for their proper integration in HEIs and their alignment with technological specifications of mobile and ubiquitous technologies. In more detailed, this chapter focuses on enhancing HEIs' ability to adopt and apply mobile/ubiquitous and game-based learning practices, providing significant insight and guidance throughout all development phases (design, development, implementation, assessment).

The chapter is organized in two parts where Part A investigates the basic principles towards the effective implementation of GBL (focusing on digital games) in HEIs; it further delineates the way mobile and ubiquitous technologies can support the smoothest integration of GBL in those specific organisations and its fastest adoption by relevant stakeholders (teaching staff, administrative staff, middle-level management employees, students). Part B presents best practices and examples of GBL in Higher Education using mobile/ubiquitous devices. The provision of such best practices and examples on specific relevant activities using mobile devices can guide academics and instructors realize the impact of these innovative educational practices thus leading to their fastest and smoothest adoption in HEIs' curricula.

DIGITAL AND MOBILE GAME BASED LEARNING IN HIGHER EDUCATION

Theoretical Background

Using games is identified in the literature as a good practice towards raising motivation and engagement in learning processes. They have

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