Chapter 16
The Fundamentals of Game-Based Learning

Kijpokin Kasemsap
Suan Sunandha Rajabhat University, Thailand

ABSTRACT
This chapter explains the overview of Game-Based Learning (GBL) and the significance of GBL in global education. The aim of GBL is to teach something while the students are playing. As the cost-effective and highly engaging learning method, GBL has the potential to motivate students and offer custom learning experiences while promoting long-term memory and providing practical experiences. GBL facilitates student engagement, motivation, and immediate feedback, toward bringing educational success into the modern learning environments. Regarding GBL, goal-directed practice coupled with targeted feedback enhances the quality of students' learning. GBL provides the learning opportunities that engage students in the interactive instruction and helps prepare them to participate in the technological society of the 21st century.

INTRODUCTION
From primary and secondary educational levels to higher education and lifelong learning, the use of games for educational purposes has become a focus of increasing interest for instructional designers, teachers, and researchers (Romero & Usart, 2013). The ability of educational leaders to exploit knowledge assets is essential in order to gain the capability of lifelong learning and knowledge management in higher education institutions (Kasemsap, 2016a). Learning through games is a promising field for the future of education (Ebner & Spot, 2016). The use of electronic games for educational purposes tends to relate to practicality and feasibility (Tan, Johnston-Wilder, & Neill, 2011). The difference in country-specific curricula, pedagogy, and practice highlights the technological requirement for a flexible approach of embedding digital games into primary classrooms in a way that is sensitive to context (Allsop & Jessel, 2015).

Educational computer games can motivate students to develop the basic competencies and encourage challenging themselves to be better and learn the additional knowledge related to the important
The Fundamentals of Game-Based Learning

tasks (Kasemsap, 2017a) and can provide the great potential as an active form of knowledge transfer (Minovic, Štavljanin, Milovanovic, & Starcevic, 2012). The interactive power of digital games makes them a compelling tool for teaching and learning (Liu & Li, 2015). GBL can contribute to increasing students’ cognitive skills, academic performance, and motivation in learning (Huh, 2008). The diffusion of GBL can be facilitated only if both learners’ and teachers’ needs and goals are taken into account (Ketamo, Kiili, Arnab, & Dunwell, 2013).

This chapter focuses on the literature review through a thorough literature consolidation of GBL. The extensive literature of GBL provides a contribution to practitioners and researchers by explaining the theory and applications of GBL in order to maximize the educational impact of GBL in global education.

BACKGROUND

Digital technologies have been growing in diversity and the possibilities they offer have increased, providing new opportunities for the transmission of knowledge (Leitão, Rodrigues, & Marcos, 2014). The term game-based learning (GBL) includes all of the following items: serious games, instructional games, instructional video games, instructional computer games, structuring learning experiences in a gaming environment, and education games when used in an educational environment (Vu, Fredrickson, Hoehner, & Ziebarth-Bovill, 2016). While an increasing number of students are using educational games to learn in the informal environments, their acceptance in the classroom as an instructional activity has been mixed (Kenny & McDaniel, 2011).

The right balance between educational requirements and motivational factors should be achieved in order to ensure an enjoyable and effective GBL experience (Toro-Troconis & Partridge, 2010). Technology and games have yielded positive results concerning motivation, persistence, curiosity, attention, and attitude toward learning (Shin, Sutherland, Norris, & Soloway, 2012). Instructional games are created when training is added to a gaming environment or when gaming aspects are incorporated into training (O’Connor & Menaker, 2008). Educational games can provide students with a motivating and stimulating environment while providing them with immediate feedback to promote learning (Bodnar, Anastasio, Enszer, & Burkey, 2016).

THEORY AND APPLICATIONS OF GAME-BASED LEARNING

This section provides the overview of GBL and the significance of GBL in global education.

Overview of Game-Based Learning

The interest in GBL has rapidly grown over the past decade (Martinez-Garza & Clark, 2013). A new interest in the use of video games for learning has emerged, and a number of claims are made with respect to the effectiveness of games in education (Vandercruyssse, Vandewaeter, & Clarebout, 2012). Traditional lectures are more effective in increasing student knowledge, whereas educational games are more effective for student enjoyment (Charlier & de Fraine, 2013). Educators face three main challenges when integrating games, including curriculum integration, technical requirements, and teacher training (Kebritchi, Hirumi, Kappers, & Henry, 2009).
Related Content

Models of Competences for the Real and Digital World
[www.igi-global.com/chapter/models-of-competences-for-the-real-and-digital-world/195267?camid=4v1a](www.igi-global.com/chapter/models-of-competences-for-the-real-and-digital-world/195267?camid=4v1a)

The Infusion of Technology Within the Classroom Facilitates Students’ Autonomy in Their Learning
Fariel Mohan and Garry Soomarah (2019). *Advanced Methodologies and Technologies in Modern Education Delivery* (pp. 380-394).
[www.igi-global.com/chapter/the-infusion-of-technology-within-the-classroom-facilitates-students-autonomy-in-their-learning/212827?camid=4v1a](www.igi-global.com/chapter/the-infusion-of-technology-within-the-classroom-facilitates-students-autonomy-in-their-learning/212827?camid=4v1a)

Mobile Learning in Higher Education
[www.igi-global.com/chapter/mobile-learning-in-higher-education/191010?camid=4v1a](www.igi-global.com/chapter/mobile-learning-in-higher-education/191010?camid=4v1a)

ELearning for Persons with Visual Disabilities: Case of Low Vision
[www.igi-global.com/chapter/elearning-for-persons-with-visual-disabilities/128049?camid=4v1a](www.igi-global.com/chapter/elearning-for-persons-with-visual-disabilities/128049?camid=4v1a)