

Digital game-based learning (DGBL)

Gamification is the use of game-based mechanics, aesthetics and game thinking to engage people, motivate action, promote learning and solve problems. Basically it's the use of gaming technology to solve problems outside of the games sector. Games are created to draw people in, to keep them playing, to keep them interested, entertained and involved. And it's much more than just adding rewards, points, and badges to processes to motivate people – it's the instructional method, and not just the delivery system, that provides the elements for learning in a game situation i.e. we must ask what pieces in games makes them engaging such as interactivity, content, and story. As to the impact of gamification, it was found that employees trained on video games learned more factual information, attained a higher skill level and retained information longer than workers who learned in less interactive environments. Games provided a high level of instruction, which depends on the interactivity or the elements that make the game engaging. In other words, the engagement of the learner in the game leads to learning. Gamification is taking elements of gaming and adding them to traditional instruction. Instructional designers have been using some elements for years, like stories, case studies, or interactive activities, but gamification is more about taking into consideration interactivity and engagement first, and objectives second. Companies are now also "gamifying" various business processes to motivate employees, fundraise for causes, and market products. Tech-industry research firm Gartner estimates that by 2014, some 70% of large companies will use the techniques for at least one business process.

Learning can be made challenging, motivational and rewarding through digital game-based approach. Actively participate in the learning process is what most students seek and need. They believe that such an approach provides an effective and interactive experience that helps them to grasp the essentials of learning and motivate them to further their knowledge and expand their skills. In a game-based learning environment the students will have the opportunities to engage in a risk-free, challenging and progressive experience where failures do not convert into obstacles. They learn how to plan and refine their actions until they fulfill the learning objectives. In such an environment, the students will happily adopt a self-improvement process during which they choose a range of actions and they assess their consequences. Many studies have shown that DGBL has a positive impact on learning since the subject matter is directly related to the learning environment. It has been reported that gaming is a primary mechanism of learning and socialization common to all human cultures, as well as a number of animal groups. For a number of reasons the DGBL approach has proven to be an effective educational tool¹:

- a. An engaging experience.* We all have fun when we play games. As an educational tool, DGBL can improve learning performance. Even in classical learning settings, when students have fun, the learning pressure dissipates, which allow them to freely devise and revise their strategies according to a specific goal.

¹ <https://elearningindustry.com/elearning-statistics-and-facts-for-2015>

- b. Competition.** It is well known that competition, in general, provides motivation to students to engage and finish a challenging activity. In traditional learning methods like a classroom lecture or discussion the competitive components of a game are usually missing. In a game learning environment there is no need for the learners to be against each other, players can attempt to challenge themselves and reach higher scores
- c. Rewarding.** Learners will see their skills improved when they use a defined set of strategies to overcome an obstacle. Furthermore, rewards aid in the learning process by keeping the participant invested and coming back for more. This fosters a continuous learning process for the learner, as each learning objective is tied to a series of challenges. Goals and their corresponding rewards can be built in stages and set according to difficulty.
- d. Reinforcement.** Research on learning and behavior shows that students learn faster when there's a shorter interval between behavior and reinforcer. It would be less discouraging for students to learn their mistakes right away than seeing a red mark on paper assessments a few days later. Feedback in a game context is instantaneous and scoring can be standardized to allow comparisons.

Despite this bright picture several criticisms on DGBL have been cited. More research is needed to provide hard empirical evidence on its effectiveness. Learning in isolation is one of the negatives associated with gaming technology. Some believe that playing games distract learners from attaining other valuable skills. Others argue that implementing either a fully digital game-based curriculum or even one that relies heavily on games requires additional equipment, software, and training of teachers, thus increasing costs. Although more studies need to be done and more games have to be developed to prove its lasting power in the field of education, game-based learning can offer many advantages when done properly. Many decision makers are engaging in a long debate on whether or not digital game-based learning, which is now thriving, will prevail in the next 10 years or so. Based on the figures released by *Ambient Insight*, the game-based global market reached \$1.5 billion in 2012 and is expected to grow to \$2.3 billion in 2017, a compound annual growth rate of 8.3%.