

GAME-BASED LEARNING: TOO GOOD TO BE TRUE?

EMERGENCE OF SERIOUS GAMES

By **ADELINE TAY**
adeline.tay@leaderonomics.com

In light of the growing popularity of games among both males and females across all age groups, many educators are looking into how games can be used for educational and training purposes. Games that were developed for such purposes were termed as “serious games”. Other terms that emerged from the literature are computer educational games, digital game-based learning, and educational games.

Just like any other video games, serious games are based on a set of agreed rules with clear goals and objectives that can only be achieved by defeating or overcoming the respective challenges in the game. This is complemented by the incorporated element of educational content. This game-based approach to learning has the potential to influence learning by manipulating cognitive load and by affecting learners’ motivation toward a learning task.

According to Kurt Squire, director of the Games, Learning & Society Initiative, students learn through “a grammar of doing and being” and the design of video games for educational purposes is shifting from one of “delivering content” to one of “designing experience”.

Moreover, games have been shown to engage students both emotionally and behaviourally through their content. There is much potential in introducing game-based learning into the classroom. Here are some reasons why:

1 PLAYERS ARE INTRINSICALLY MOTIVATED

Both theoretical and empirical research support the notion that serious games possess the potential to positively influence intrinsic motivation.

In other words, players



are willing to invest more time and energy in serious games not because of extrinsic rewards, but because the gameplay is a rewarding experience in itself.

There are several factors that contribute to the motivational appeal of serious games, which have been identified in the literature.

In a meta-analysis, autonomy and competence have been recognised as essential motivators in serious games. Thomas Malone, an American organisational theorist and management consultant, proposed that challenge, curiosity, and fantasy are three of the most important aspects that make a game intrinsically motivating.

Furthermore, the element of competition has been argued to have positive effects in learners’ motivation to not only engage in the learning activity, but also to persist in it, and achieve success in the task.

Therefore, serious games can

lead to higher performance because students who are intrinsically motivated are eager to learn, and at times become so focused on and absorbed in a learning activity that they might lose track of time and completely ignore anything else that is happening around them; this phenomenon is termed as “flow” (which brings us to the second reason).

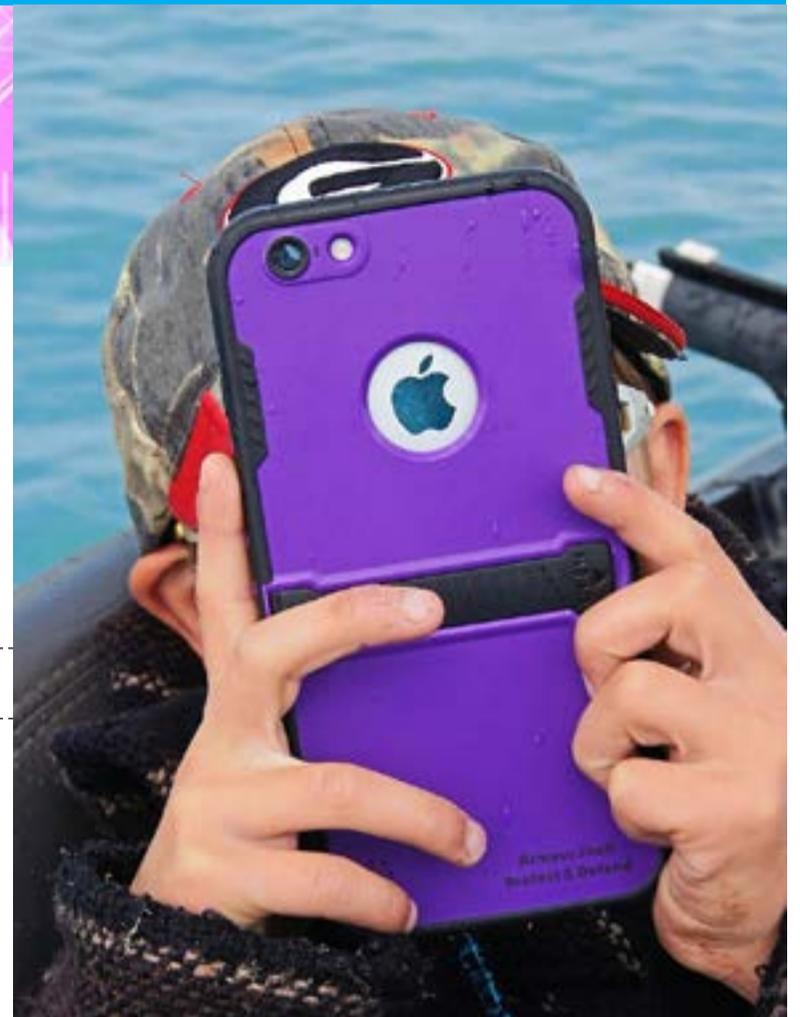
2 PLAYERS ARE IN A STATE OF ‘FLOW’

The original concept of “flow” was first defined by Csikszentmihalyi as a state of intense concentration on a particular task that leads to a loss of self-awareness and the sense of time.

Many individuals can testify to this phenomenon and recall a time whereby one is totally engrossed in a particular task or activity, especially one that is perceived as enjoyable, and as a result experience the illusion of time “flying by”.

According to Csikszentmihalyi, a flow state can also be achieved when a presented challenge is matched by the individual’s ability to solve that challenge, thereby resulting in a feeling of pleasure.

As an extension of the original flow theory by Csikszentmihalyi, John Sherry proposed the media flow theory which states that



flow is achievable if the demands of a particular media product (e.g. serious games) are at or slightly beyond the ability of the user.

It is important to keep this in mind because according to the Yerkes-Dodson Law, players may be bored and lose interest in the game if it is too easy, or they may be frustrated and give up if the task is too demanding.

In relation to the Yerkes-Dodson Law, the appropriate level of challenge presented in serious games needs to be considered in order to encourage the learners to engage and immerse themselves fully into the gameplay, and hence resulting in optimal learning performance.

3 PLAYERS ARE FIRED UP BY CHALLENGES

Game challenges are obstacles which are embedded in the game that a player must overcome in order to

win the game, and they can appear in either manifest or intrinsic form.

Manifest challenges refer to the obvious enemies or tasks that the player must overcome to win, such as quests that one has to complete or enemies that need to be defeated.

Intrinsic challenges involve learning the specific rules and strategies of a particular game which allow the players to control, navigate and interact in the game world.

Thus, one needs to first master the intrinsic challenges before one can overcome the manifest challenges.

However, depending on the complexity of the game, the intrinsic challenges can be quite difficult to deal with, as they also involve kinetic skills needed to operate the interface, such as eye-hand coordination to operate controllers, strategic-thinking ability to solve complex puzzles, and a variety of other cognitive skills that facilitate interaction with the game world, such as three-dimensional mental rotation and targeting.

Although challenges may appear to be potentially frustrating, research has shown that it can be a powerful motivator, and can result in a state of flow when used appropriately.

Rather than formulating a game that strives on luck or random chance to win, serious games work best when formulated in a way that winning is brought about by applying one’s own knowledge, skills and strategies in the form of challenges.

■ Adeline Tay completed her Masters in Education (Educational Psychology) at Sydney University, and is now specialising in developing simulations at Leaderonomics. To find out more on the simulations that Leaderonomics has to offer, write to training@leaderonomics.com

