Improving the Impact and Return of Investment of Game-Based Learning

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ABSTRACT

Today’s economic situation demands that learning organizations become more diligent in their business dealings to reduce cost and increase bottom line for survival. While there are many champions and proponents claiming that game-based learning (GBL) is sure to improve learning, researchers have, thus far, been unable to (re)produce concrete, empirical evidence supporting this claim. Lacking appropriate assessment methodologies to showcase the effectiveness of the learning technology and to convince stakeholders that GBLs could really work, it is no wonder that many learning organizations regard GBL training as a potentially high-risk technology investment. This paper describes a GBL assessment methodology designed specifically to collect player-generated data in an in situ manner (i.e., within the game environment itself) through telemetry. This methodology further incorporate data visualization to translate the data collected into meaningful information and actionable intelligence for various stakeholders.

Keywords: Assessment, Game-Based Learning, In Situ Data Collection, Information Trails, Telemetry

INTRODUCTION

Today’s difficult economic situation places tremendous pressure on many learning organizations from corporate to higher learning institutions. To survive the turmoil, administrators of these learning organizations have become even more diligent in their business dealings to maintain low operating costs, while at the same time, increase bottom lines. Since training often falls in the middle between the nice-to-have’s and need-to-have’s, stakeholders of learning organizations must ensure that any investment in learning products will bring about the impact and return of investment (ROI) they seek. From Chief Learning Officers (CLOs) of Fortune 500 companies to Software Acquisition Management (SAM) in the military and administrators of learning institutes, stakeholders are required to make wise purchasing decisions to invest in new learning products that raise productivity, as they contemplate investing in learning products for their organizations, which can include both hardware technologies (e.g., tablets and mobile computers), and software technologies (e.g., cloud applications and simulations).

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The decision to invest in game-based learning (GBL) applications can be difficult for stakeholders because educational researchers remain equivocal on the effectiveness of digital games (social games, serious games, etc.) for learning. On the one hand, while a great number of publications claim that the future of learning is found in GBLs (e.g., Gee 2007, Aldrich 2009); on the other hand, some researchers highlight the absence of replicable empirical evidence in support of such claims (see Clark, 2007). As academics and pundits continue to debate the merits of GBLs, the learning technology is in danger of being labelled as yet another ‘high-risk’ technology fad. However, when examined more closely, no one is really claiming that GBL should not be used for learning. It is the evidence of GBL effectiveness that is being questioned; more specifically, the lack of evidence thereof.

This absence of compelling evidence is due to the lack of appropriate assessment methodologies capable of showcasing the effectiveness of the learning technology, and not so much that GBL is not useful. In other words, most assessment and research methodologies currently available are just not suitable for the assessment of GBL because the majority of them are from the era of face-to-face teaching. New assessment methodologies needed to be developed to help visualize GBL assessment as simpler indicators that are easily understood by stakeholders and administrators.

WHAT CAN GAME-BASED LEARNING REALLY DO?

Digital games were first tested by the military as a possible instructional medium because of the similarity found between first-person shooter games and some military objectives (Fong, 2004). Today, GBL has moved beyond the boundary of military training and is increasingly being used for online learning by training organizations and higher education institutions. Because not all games and simulations are created equal, there remain many inconsistencies between what GBLs purported to do and are able to accomplish. While most GBLs claimed to facilitate some sort of ‘learning’ within the virtual (game) environment, learners’ GBL ‘experience’ could range from agent-guided immersive learning to merely exploring an environment where learning is ‘expected’ to occur but lacking any follow-up to verify that learning has indeed occurred.

With such a wide range of offerings, how should stakeholders of learning organizations decide if a certain GBL application is worth its salt? Should s/he focus only on the instructional and learning aspects of the GBL, or should the assessment of learning be factored into the consideration as well? For example, a customer who has paid a travel agent to arrange for a trip has every right to expect to arrive at the right destination. Similarly, a manager who has invested in GBL for his organization need to know if the trainees truly arrived at the intended learning destination as claimed by the game maker.

Having said that, how many stakeholders have the know-how to evaluate if GBL actually took place as designed or if the users of the GBL learned anything at all? A lot depends on the GBLs themselves, some contain an integrated mechanism to track players’ actions within the virtual environment, while others merely create an activity log-file and leave it to the trainers to figure out how to interpret the data as is. The lack of standardization in data structure posed more obstacles for various learning organizations. As not every trainer and instructor happens to be an expert in data analysis, stakeholders must consider hiring third-party data analysts to make sense of the data, which add to the overhead and further exacerbate the tight budget situation.

GAME-BASED LEARNING AND ASSESSMENT

A learning activity without assessment is informal and comparable to the endeavour of hobbyists, at best. As Michael and Chen (2005)
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