

Using Serious Games for Training and Development of Human Resources

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INTRODUCTION

The main objective of this work is to show that there are significant potential benefits from the use of some types of video games to develop Human Resources' skills. We intend to show that the technology used in video games can also be used in the development of specific applications (serious games) for training and education. As a result, in general, the advantages of the use of serious games for this purpose, with respect to traditional methodologies, translate into a more effective development of Human Resources (HR) capabilities which results in superior performance, thereby contributing to an improvement in the execution of processes in organizations. Finally, we will discuss some examples of the use of serious games to improve the skills and performance of HR.

BACKGROUND

Concept of Video Game

Since this article addresses the topic of video games, we will begin by defining the concept of video game. We can define video game as "a set of activities involving one or more players. It has goals, challenges and consequences. Moreover, it has rules and involves some aspects of a competition" (Moita, 2007). Another possible definition is: "a kind of game based on the interaction of the individual (player) with a machine through a controller, either on a console, computer, mobile phones or other technology." (Oliveira & Pessoa, 2008). Video games emphasize action and interactivity in which the player does not have a purely passive role, since he adopts the role of protagonist of

the story, having to act consistently for its unfolding (Salvat & Miranda, 2008).

Video games have undergone a remarkable development over the past decades and the technologies employed, both hardware and software, suffered a tremendous evolution, allowing doing things unimaginable 30 years ago. Currently there is an entire generation that grew up with video games and that is well versed in its use. Video games are a real social phenomenon, which cuts across all cultures. So, it is not surprising that its application to areas beyond pure entertainment has been considered.

Certain characteristics of entertainment video games have proven to be of interest to improve management skills. Video games such as Civilization, Sim City, Age of Empires, Starcraft, among others, are already being used in some universities as learning tools, thereby improving students' skills in the areas of resource management, problem solving, decision making, critical thinking, creative thinking and leadership, which are important skills in workplaces in the real world. As a result, many companies are turning their attention to this kind of video games as a tool for the development of management skills, such as IBM, which carried out a study for eight months in conjunction with the company Seriosity about leadership in online games (IBM, 2007).

The strong emphasis of the aforementioned types of video games in management capacities of the player has attracted the attention of education professionals in the field of management and economics, whom are increasingly using them as a teaching tool. Some companies are also beginning to understand a reality in which video games can be an important aid in training and developing skills of their employees.

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Games-Based Learning

The use of video games as a learning tool, named Games-Based Learning (GBL), calls upon the potential of this type of software to captivate and engage players with a specific purpose, such as to develop new knowledge and skills. This type of learning allows its users, through simulations, to perform tasks and experiencing situations that otherwise would be impossible or undesirable in terms of cost, time or safety.

The use of simulation games dates back several decades. Faria and Nulsen (1996) reported that its emergence occurred in 1955, with a simulation developed by the Rand Corporation based on the logistic system of the United States Air Force. In this simulation, called *Monopologs*, players must manage inventories of the supply system in the Air Force. In 1956 comes the first widely known management game, *Top Management Decision Simulation*, developed by the American Management Association. This game was followed, in 1957, by the *Business Management Game*, developed by Greene and Andlinger for the consulting firm McKinsey & Company and by *Top Management Decision Game* developed by Schreiber. Thereafter, the number of business simulation games grew rapidly.

From what was mentioned before, we conclude that the use of electronic games as a learning tool has been happening for many years now, having been introduced a few years after the appearance of the first digital computer in the 1940s. Since then, video games have been developed for educational purposes, that which is called educational video games. Many researchers over the past decades have carried out studies to determine whether in fact these games are effective at aiding learning, some of which are referenced in the following paragraphs.

Buckley and Anderson (2006) developed a model to explain how video games teach and influence behavior. This model, which they called General Learning Model (GLM), was based on a previous model, the General Aggression Model (GAM), which explains how violent video games increase violent thoughts, feelings and aggressive behaviors. The authors concluded that playing video games has several effects, among which, factual learning, learning of specific behaviors, learning new patterns of perception and decision and, ultimately, personality changes that occur when the habitual patterns of thought and behavior change as a result of repeated use of video games. They also con-

cluded that the use of educational video games allows teaching and that content is relevant. They observed in a variety of contexts that people learn with the use of video games. They also observed that video games can effectively teach, regardless of the desired outcome by those who developed the game and despite of the player's intended use.

Barlett, Anderson, and Swing (2009) analyzed the various effects resulting from the use of video games in general, and particularly of educational video games. They cite a study by Gentile and Gentile (2008), in which the authors argue that video games are an excellent way of learning since, unlike traditional methods of learning, this form of instruction reinforces students often, emphasizes distributed practice (because students continue to play the games on many separate occasions), provides clear objectives and requires the active participation of the student. They also mention that video games and simulators have been used in various situations in order to teach certain specific skills. They refer several studies conducted by researchers about the effects resulting from the use of video games. In regards to positive effects, the authors mention that playing video games was associated with superior performance in achieving a set of tasks related to visual attention. They also cite several studies that have shown that playing video games is related to the ability of mentally rotating or arranging objects, providing greater performances in spatial ability tasks.

Buckley and Anderson (2006) mention several factors that contribute to confirm video games as an excellent tool for learning, based on various research projects:

- They successfully get people's attention;
- They teach attitudes necessary to achieve successful behaviors;
- Enable players to feel competent about performing a task;
- They are motivating;
- Allow people to actively participate rather than passively observe;
- Show all the steps necessary to perform a certain behavior or series of behaviors;
- Allow repeated practicing.

They also mention three reasons why video games are motivating. First, players have control over the

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