



THE STRENGTH OF COMPLEMENTARITY OF E-LEARNING AND SERIOUS GAME

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ABSTRACT

The digital revolution seems to be endless, it accelerates for well over a decade with the innovation of new terminals and virtual worlds, social networking, Web 2.0, cloud computing. Digital workspaces extend widely nowadays and new sciences appear, notably digital learning is a technological revolution that impacts learning and training: E-learning, Serious Games, MOOC, and Mobile Learning ... although practices evolve, e-learning and serious games are still equivocal approaches and we still hear questions relating to it. In this article we identify the cataclysm leads by the two solutions serious game and e-learning and deduce the major impacts on the field of learning and training, identifying the strengths of each one of them in order to obtain accurate information that will deepen reflections on the passage to digital learning and the emblem of the competition and complementarity between e-learning and serious games

Keywords: *A Digital Learning, Serious Game, E-learning, fun learning mechanisms.*

1. INTRODUCTION

Digital is now everywhere and used by everyone: tablet, smartphone, gear... It causes great changes which we must adapt to, these changes are economic globalization and the development of information and communication technology, and therefore we can say that the digital era has come. Decidedly, the arrival of digital shoved training protocol among many other fields, and computer skills has encouraged and established itself as a nail on learning techniques, thus cooperating in the emergence of many digital teaching methods and technology mutation in training services.

Today, the terms of access to knowledge, experience a surprising progress and diversity: multimedia games, e-learning, serious games, mobile learning ... however training as we knew it will be impacted by the education system changes acting under the pressure of new technologies of information and communication. However, we should not confuse between modality training

which is an educational use, and scanning or digitization.

Although devices evolve, digital is still not present in the field of training and learning, and it remains difficult to address the issue of the quality and effectiveness of a particular device. What definition can we give to learning methods? Do they improve the quality of learning? Will digital seize training entirely? What are the major strengths of existing educational digital devices? How to choose between different devices? E-learning or serious game? These are the questions which we must try to answer, through the history of digital learning and terminology, as well as the issues it raises.

2. TRAINING OVERGROWN BY DIGITAL

Digital technology has made a sacred flood that didn't spare training through e-learning, which is the most democratized training tool. According to the e-learning survey conducted in 2012 by AWT_NOW.be: 15% of large companies reported



in 2010 not considering the implementation of e-learning, they are no more than 5% today. [1].

E-learning solution being required as a form of learning, it remains unclear which solution is most appropriate. Unfortunately there is no typical answer to this particular question considering that we can have as many solutions as contexts, therefore the solution is generally chosen according to the expressed need and context. The variety of technologies available still expanding even more the methods choice, and pedagogical approaches also have an impact on the choice of the device. [2],[3],[4].

3. COMPUTING ENVIRONMENT FOR LEARNING

The different forms of learning experienced scalability over the time. We categorize Training methods according to their historical development. Although there is no categorical view of this evolution, recent references have agreed to a model based on summaries of dominant practices or dominant models of operations; they are not totally exclusive.

Beyond historical interest, there is the concept of future development consideration. Taking account of its criteria, it is stated that among all the learning models and all the interactions and implications between them, e-learning and serious games are the most democratized and more present training forms on digital learning market. Due to their advantages in terms of modularity and adaptability, e-learning and serious games allow a greater organizational flexibility and a thin personalization of learning paths.

A. E-LEARNING

No one can ignore the importance of TICs and what they bring to workplaces, as well as education and training. The effectiveness of e-learning is no longer needed to be justified.

i. Definition:

There are various definitions of e-learning: online training, educational website, distance learning, telematics education, e-training ... but the definition proposed by LabSET is interesting «learning centered on the development of skills by learner and structured interactions with the tutor and peers ». [7] Although the definition is clear and convincing, and convenience admitted, we still wonder the e-learning effectiveness compared to face-to-face.

ii. Principle:

E-learning encompasses all training methods based on computer skills, and includes several independent links:

- Online supports or offline,
- Individual or collective learning,
- Present trainer, remote or absent.

Intrinsically e-learning does not compromise and does not imply:

- The physical presence of an instructor,
- The very existence of the trainer,
- Learner autonomy,
- Terms of training,
- The location of the training...

iii. Advantages:

The e-learning represents significant gains in learning, and this is what makes it particularly attractive. Its assets are represented in:

- Diversification of methods and learning strategies,
- Innovative methods and learning strategies,
- Diversification of assessment methods and skills,
- The operation and development of quality interactions,
- The improvement of digital content,
- Flexibility and accessibility,
- Improving economic efficiency.

iv. Disadvantages:

Like any technology, e-learning has a dark side. Disadvantages may be mentioned as follows:

- Discipline, learners should be rigorous and disciplined, especially if they are isolated in a distance education.
- Isolation, contact with other learners and training with the trainer are reduced or nonexistent.
- Tools control, e-learning requires sufficient computer skills to take the training.

The inconvenience of e-learning is eligible as its annoyances remain much moderated and in no way interfere with the educational gains we are seeking.

B. SERIOUS GAME

The serious game is rooted in the great family of fun learning mechanisms. However, the balance between education and fun aspect of the game is difficult to obtain.



i. Definition :

Serious games take part in technology and video game codes for educational purposes. It is a particular form of e-learning. The name serious game indicates "games whose primary purpose is other than simple entertainment." [9] Michael Zyda who played a major role, according to several references in the development of serious games has proposed the following definition: " A mental challenge, played with a computer in accordance with specific rules, that uses entertainment as added value for learning and training in institutional or private sectors, in the areas of education, health, public safety, as well as for communication strategy. » [10]

ii. Principle:

Serious games come from the combination of a learning scenario with a video game, so they are used in training. They can take many forms, from the most primitive to the most advanced and refined:

- . Survey with a fun component,
- . Role-playing or adventure: the learner interacts with avatars or his environment to carry out a mission,
- . Simulation of real situations: Technical gesture emergency.

iii. Fields of application of serious games:

As the perception of serious games intends other use than simple entertainment, fields of application are very large:

- . Defense,
- . Education and training,
- . Advertising,
- . Culture,
- . Communication,
- . Health sector [Fig.1]

iv. Advantage:

- . Serious games are not classic games; they are rather fun video-learning environments whose objective is educational. The serious game is a training officer and information that educates and involves the learner in the situation sought. Serious games can be applied to various sectors, they offer training that addresses not only children, unlike educational games.
- . The decisive advantage of serious games is the motivation of learners. It is designed to increase the essential motivation of the

student who wishes to progress in the game / training.

- . The design of serious games is focused on the practical aspect of the training and learning by experience.
- . The learner can better assimilate his successes and failures, as he has an impact on the timing and sequencing of the game.
- . Train the learner with particularly difficult simulations and reconstructions, hard to discern in conventional formations.
- . The serious game provides targeted training in a well-defined period of time with an authentic outcome.

v. Disadvantages:

The learning game has an unfriendly side, therefore a learner population may think that training by experience is generally ineffective and that for two reasons:

- . The learner is not generally aware of the purpose and is worried about his entire learning path.
- . The serious games gameplay represents often an additional burden to the learner, and the rules of the game which can be too complex may discourage the learner after only a few minutes of training.

4. DISCUSSION

The advent of new information and communications technology is a phenomenon that has allowed to train online and track distance education without traveling in a training center or to bring in a trainer.

In the previous sections we found that e-learning and serious games are in some points different, especially at the conceptual level. Serious games allow experimenting with different maneuvers, always with the ability to replay, which promotes the growing competence of learners who develop real performance on the field. However progress in training - game requires assistance and discipline, quantitative and qualitative, through e-learning modules. While e-learning is a learning method which supports IT tools with only a purely theoretical content.

Therefore, we can say that the main difference between the two learning modalities may be the intersection element that can make the strength of a unified and effective learning model. In other words, the capsizing of a model to the other will



optimize the learning process and its outcomes, hence the idea to combine them.

Examples of possible approach:

- An e-learning module in preparation for a classroom training followed by a formal virtual situation with a serious game,
- A combination of formal learning and a drive module,
- Training entirely remotely, reinforced by training and an assessment situation
- A placement test via a virtual situation unlocks only the learner-player required modules and then reinforced by training modules.

The duality between the two concepts produces a profound change at the conceptual level of each one and how to approach learning, because in fact, the differences between the two forms of learning cannot be overcome, but this amounts also to give them a positive and desirable value. In such a perspective, complementarity would be like the invisible hand that would ensure the future of learning to find a balance in order to integrally achieve the main purpose of any training, including the assimilation of new knowledge and skills by learners.

5. CONCLUSION

The reflection in this paper has allowed us to note that both e-learning and serious games are no way in competition, although they have different learning approaches. The two digital devices are intended for learning, e-learning provides theoretical content and assessments and can raise awareness of knowledge necessary to practice any skills, while the serious game manages learning by experiencing with training modules and allows the simulation of virtual real scenes.

This observation leads us to say that the serious game was not designed to replace e-learning as it is perceived. E-learning and serious games are definitely complementary.

Our future work will focus on the categorization of serious games as well as the methods of scripting and designing platforms.

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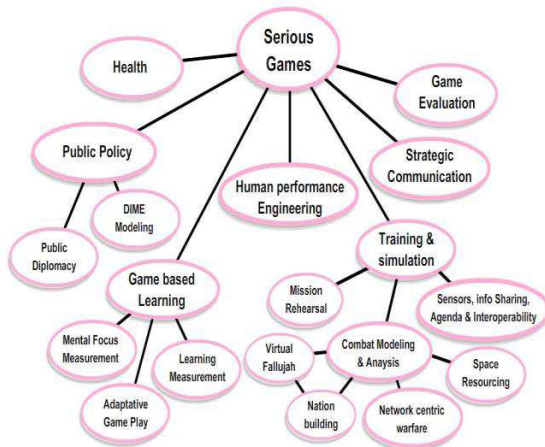


Fig.1. Fields of application of serious games according to M. Zyda (August 07)