SMART GAMES AND CONTEMPORARY BUSINESS EDUCATION

Marian KRUPA[207]

ABSTRACT

Accordingly to Dale's Cone of Learning Experience, the efficiency of teaching, in general, is directly connected to the method that is implemented in this process. If we focus more on "hands on" experience by using analysing, designing, creating, evaluating etc. approach, we will mange to deliver higher standards of education. Today, this "learning by doing" has become known as "experiential learning" or "action learning" [Anderson H.M.]. There is no difference, when we try to develop the best approach to business education. It seems to be that the best option for management programmes is to adapt the curriculum that consists of "Role-play a situation" or "Model or Simulate a Real Experience". In fact, in both ways, we present the management process as a game that allows to build different business models and different managers roles. In other words, we can test by simulation different business ideas, solutions, processes, on the other, we can evaluate presented by players different competences. The article presents the idea of "Serious / Smart Games" that were discovered for educational purposes by Clark Abt in 1970 and defines "good practices" for games that can be implemented in the contemporary business education system.

Keywords: business education, smart games, action learning, role-play, real experience, simulate

1. Introduction

Accordingly to Advanced Learning Technology Research published at the Serious Play Conference, it is estimated that Serious Game sector will reach revenue of $8.1 billion by 2022 from the $3.2 billion achieved in 2017 (Adkins 2017). This spectacular performance is due to rapid growth of the interest in this subject of business schools, as much as international corporations. In both cases, the cultural and social change and availability of state-of-the-art Information Technology, are primary catalysts driving the global game-based learning market.

In fact, there are several reasons that make the issue of Serious Games extremely attractive for research, education and business. The reasons are as follows: 1) Boost students / employee engagement; 2) Encourage practical application; 3) Offer instant feedback; 4) Measure students / employees performance; 5) Encourage collaborative learning; 6) Offer a "safe" (no risk) and friendly environment for all participants (Hughes 2017).

[207] Dr. Marian Krupa, The Witold Pilecki University of Applied Sciences in Oświęcim, Poland, marian.krupa@dydaktyk.pwsz-oswiecim.edu.pl.

The study carries out four main objectives: 1) To research development of Action Learning concept in Higher Education; 2) To define and analyse the influence of "Millennials" generation on the quality of contemporary education systems; 3) To research development in the design and use of Serious Games to support teaching and learning in business schools; 4) To explore new dimensions for Serious Games within new category named Smart Games.

The scoping study set out to address the following research questions: 1) What is the main role of "Role-play a situation" or "Model or Simulate a Real Experience" in business education? 2) What are the benefits of implementing Action Learning principles in business/university curriculum from "Millennials" generation perspective? 3) What are the essential features and good practices for designing Serious Games? 4) What are new functionalities, perspectives, dimensions available in a new category names as Smart Games?

2. Action Learning - overview

Accordingly to Dale's Cone of Learning Experience (Dale 1969), the efficiency of teaching, in general, is directly connected to the methods and tools that are implemented in this process. If we focus more on "hands on" experience by using analysing, designing, creating, evaluating approach, we will mange to deliver higher standards of education. It is also extremely important for Dale, to use various kinds of audiovisual media to increase success of any learning process. Today, this "learning by doing" approach has become to be known as "experiential learning" or "action learning" (Anderson, Coleman 2014). There is no question that today, the best option to adapt to the most efficient educational curriculum must consists of "Role-play a situation" or "Model-Simulate a real experience". However, Action Learning has much wider meaning. It is based on the premise that "learning emanates from reflection followed by action to solve real problems" (McGill, Beaty 1995). The "solve real problem" approach supported by "reflection-action" is extremely important, especially in business education. It expresses wide range of issues covered by quantitative and qualitative perspectives (Krupa 2003) that every manager should learn in the Business School and then practice in a real business environment[208]. Finally, it leads us to Serious Games method that was developed and adapted by Clark Abt in 1970. In fact, those games were designed for a primary

[208] In Economics, those two categories describe areas of research defined as positive or normative statements. In the first instance, we take into consideration the assumption, that "the market is the mechanism of distinguishing of what is efficient from that what is not efficient, but it is not a substitute of responsibility" (quantitative perspective). In the second, based on A. Smith's "Theory of Moral Sentiments" we can ultimately state that "a stable society (organization) is based on 'sympathy', which means a moral obligation to respect other human beings" (qualitative perspective). In the first place, we talk about value as a numerical fact - positive economy, in the second – value is the one of normative category - normative economy (Krupa 2003).

purpose other than pure entertainment – as a convenient and an efficient tool to educate new generation of students. In fact, "learning is most effective when it is active, experiential, situated, problem based and provides immediate feedback" (Boyle, Connolly, Hainey 2011). Today, Serious Games also take advantage of state-of-the-art information technologies (computer, video games, Cloud Computing, Internet of Things, Business Intelligence software solutions etc.) to create the most attractive channels to communicate with the "Millennials" generation.

3. Contemporary business education and "Millennials" generation

Imagine asking them to go through a two-hour long training sitting at one place! Even if they agree to it, it will be a sheer waste of their time as they will not remember a thing!
(A. Hughes)

Today, all business schools and universities face significant cultural, social change in the way young people approach the need for education and present themselves as students. So called "Millennials" also known as "Generation Y" or "Gen Y" bring entirely new set of values and attitudes to the University (Ng, McGinnis Johnson. 2015). From one hand, they try to find themselves as open-minded individuals with strong desire for success that can be reached as quickly as possible. On the other, they are not willing to accept, archaic for them, model of education and in the future, they do not present favourable reception for high demand for skills and commitment defined by business organisations. From educational system point of view, they do not accept, in general, the method of training which is based on listening and making written notes - it is just too boring (it is not just "cool") and too static (nothing happens). Instead, they try to take advantage of all the electronic devices and they want to express themselves only in a positive, active and full of joy way. They focus more on the "entertainment" part of studying than on pure knowledge and business skills. In most cases, "Millennials" are not ready yet to involve themselves in a sophisticated and systematic business training activity. They are not willing to force themselves neither to study hard nor to strive for success at any cost. Accordingly to scientific research Millennials "report a high degree of preference for materialistic rewards, value leisure time over work (Twenge and Kasser, 2013) and indicate a strong preference for work/life balance (Ng and Gossett, 2013).

In spite of all the obstacles, from business, employers perspective, the educational process at the university level must lead to "traditional" results. First of all, there is need for fully matured, very well educated and fully skilled professionals. Business just needs productive, innovative and loyal workforce. From that point of view, managerial courses should enforce on students high standards of learning and full personal engagement. It leads to situation where academic teachers, being between reality of commercialisation of educational offer directed to "Millennials" and big demand from the job market for fully skilled professionals, have to find appropriate equilibrium between the quality of education defined by business and the attractiveness of the programs for "Millennials"

students defined by the educational market. This is not an easy task for anyone. It seems to be that the most effective compromise can be achieves by implementing just Serious Games as a mayor method of teaching that delivers both entertainment and knowledge, a lot of fun and business skills so much needed on a very competitive job market. We have to remember though "research still witnesses a lack of methodologies, guidelines and best practices on how to develop effective serious games and how to integrate them in the actual learning and training processes" (Catalano, Luccini, Mortara 2014).

4. Serious Games for business – in search of best practices

Serious gaming seems to have captured the imagination of, and drawn strong support from,many well beyond the actual gaming world.

(P. Wilkinson)

By definition, Serious Games deliver both knowledge and entertiment. However, this is not just a regular, party game. The term "serious" is related to "matters of great interest and importance, raising questions not easily solved, and having important possible consequences" (Abt 1987). They assist both the cognitive and affective dimensions of learning (O'Neil, Wainess & Baker, 2005). Serious Games also create the platform to individual (constructivist) activities, such as: web quest (information search and retrieval), exercise solving, carrying out scientific experiment, reflection, simulations, modelling, role playing, inquiry (pose questions), determining evidence, analysing evidence, formulating evidence, connect explanations to knowledge (Lameras 2015).
Finally, they support wide range of learning outcomes (*Figure 1*).

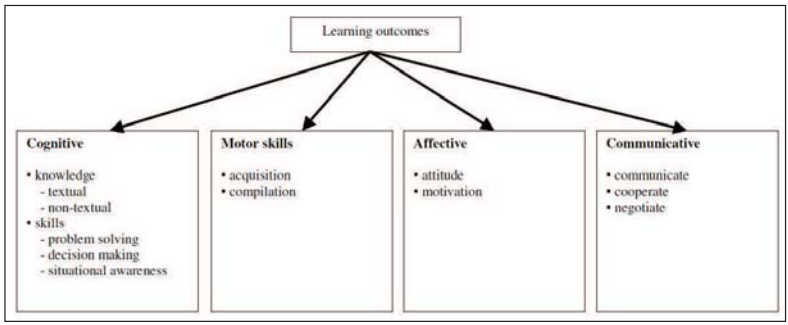

Figure 1. A taxonomy of learning outcomes (Wouters, Spek, Oostendorp 2009).

In spite of all the benefits that Serious Games bring, we have to remember that the efficiency of this model of education mostly depends on the quality of games themselves that are designed and implemented in the university curriculum. Some of the "golden rules" can be defined as: 1) Situate the learning - a suitable deploying environment and

proper interactions have to be designed in order to fit the context; 2) Minimize the cognitive load to keep high the level of engagement, of attention and of game playability; 3) Engage the learner constructively/experientially - remove any useless redundancy; 4) Facilitate the learning task - subject domain complexity is high enough to require efforts to support learning; 5) Flexibility, reusability, exploitability - presenting a wide variety of situations and scenarios which may bring value well beyond the original scope of the game (Catalano, Luccini, Mortara 2014).

Accordingly to Growth Engineering Project (www.growthengineering.co.uk) to design the right business game as a Serious Game, it is important to implement the following principles:

Search for the right story with a modern business background, a unique, intriguing subject or an interesting for young people topic.

Create right game mechanics and interactivity - to make the game itself attractive for students.

Define right rules - the easy to learn framework of the game (simplicity is the key for success!).

Design right graphical communication environment – communication by images, symbols, metaphors etc. should be understood by students.

Create right challenge - competitive approach: cooperation (team work) vs competition (individual performance).

Force "making decisions" approach with risk opportunity – try to avoid decisions algorithms that are too simple to predict by the players.

Create right perspective - the game by itself should deliver a lot of fun and create plenty of room for social, interpersonal interaction.

To summarize, it is important to declare that "a serious game needs to combine a number of different aspects to help the end user in reaching the desired effects" (Braad, Žavcer, Sandovar (2016). This is the process that requires from authors technical skills, appropriate knowledge with reference to Scientific Management theory, practical experience conducted in a real business environment and first of all - unlimited imagination.

5. "Smart Games" – new standard for business games

Serious Games also provide means of "identifying and evaluating the consequences of alternative plans and polices" (Abt 1987). It means that they go much more beyond the educational purposes. They create a smart tool for simulation and "what if" analysis. From that perspective "Serious" is transferred to "Smart". It is not just only a sophisticated educational game any more. It is much more than that. Smart Games allow trainers, managers to build different business models and create and use, at the same time, different organisational roles. In other words, we can teach and evaluate players' different business competences by testing different business strategies or models in real time. By

employing modern BI information technologies we can teach and perform tests, simulate and analyse, evaluate and optimise, communicate and decide.

Smart Games consist of all kinds of new functionalities, such as:

Evaluation of students/ managers performance in real-time delivered by mobile devices.

Communication of business data / results by using dashboard analysis (Business Intelligence approach).

Simulation performance by testing players' decisions / what-if analysis approach.

Dynamic analysis – multi-levelled cause and effect approach.

Design and implementation of smart algorithms – to search for the best possible scores and results.

"BI Smart" (www.bbest.pl) is as a good example of "Smart Game" that was designed and implemented for business education and innovation in 2016. It was introduced as part of "Smart Business intelligence" project with cooperation with Supremis - the business software provider company (Warsaw, Poland). The game (business model) prototype was tested both by students and managers during several workshops. It proved to be an extraordinary tool for procurement business education in Logistics Management and a smart implementation platform of BI optimisation mobile link to contemporary dashboard technology. It also helped to develop a new formula for business model showing a huge difference in efficiency between decision based on intuition and optimisation method that was supported by "smart algorithm" as a integral part of the game.

6. Conclusion

The purpose of this paper was to articulate the role of serious / smart games in the contemporary business education. Given the attention on the young generation of students and employees, the main aim of this article was to review existing research that defines benefits of implementing Action Learning principles in business education curriculum. Finding are as follows:

Right methods (Serious/Smart Games) and IT tools (Simulation and BI software solutions) in contemporary business education matter. They make entire educational process much more efficient and effective.

Because of high demand for more interactive education word-wide Serious Game sector will reach revenue of $8.1 billion by 2022 globally.

Digital devices/tools supporting Serious/Smart Games help to communicate with new generations of students ("Millennials"). It seems to be that it is often, the only way to gain their attention and interest in any type and field of education.

To design and implement efficient and attractive game, authors should remember: to deploying suitable environment and enforce proper interactions; to minimize the cognitive load; to engage the learner constructively/experientially; to facilitate the learning task and to assure flexibility, reusability, exploitability of the game.

Smart Games extend the value, functionality of Serious Games by allowing simulate real business problems and dilemmas in real time supported by modern analytic technologies. They both help teach students / employees and test different business / scientific cases.
To summarize, globally, there is an increasing awareness about the potential of Serious/Smart Games for education and training in many disciplines, especially in Management field. It should encorage all profesional educators and business trainers to develop innovative and unique cases for future growth and extraordinary performance of all organisations.

REFERENCES

Abt C. (1987). *University Press of America,* USA.

Adkins S.S. (2017). The 2017-2022 Global Game-based Learning Market, *Serious Play Conference*, *Metaari – Advanced learning Technology Ressearch*.

Anderson L., Coleman Ch. (2014). Action Learning. Approaches, Applications, and Outcomes: *The Wiley Blackwell Handbook of the Psychology of Training, Development, and Performance Improvement*, ch. 15.

Boyle, E. A., Connolly, T. M. & Hainey, T. (2011). The role of psychology in understanding the impact of computer games, *Entertainment Computing*, vol. 2.

Braad E., Žavcer G., Sandovar A. (2016). Processes and Models for Serious Game Design and Development, *School of Communication, Media and IT, Hanze University of Applied Sciences, Groningen*, The Netherlands.

Catalano Ch. E., Luccini A.M., Mortara M. (2014). Best Practices for an Effective Design and Evaluation of Serious Games, *Research Gate.*

Dale E (1969). Audio-Visual Methods in Teaching, *Holt, Rinehart and Winston,* New York.

Hughes A. (2017). 6 Reasons Why Companies Are Getting Serious About Serious Games, *e-Learning Industry*.

Krupa M. (2003), The Value Concept in Contemporary Organization and Management, *4th International Conference of PhD Students*, University of Miskolc, Hungary.

Lameras P. (2015). *Essential Features of Serious Games Design in Higher Education, Society for Reasearch in Higher Education*.

McGill, I. and Beaty, L. (1995), Action Learning, *Kogan Page*, London.

Ng, E.S., and Gossett, C.W. (2013). Career choice in Canadian public service: *An exploration of fit with the millennial generation. Public Personnel Management*, 42(3).

Ng E., McGinnis Johnson J. (2015). Millennials: Who are they, how are they different, and why should we care? *Research Gate*.

O'Neil, H. F., Wainess, R., & Baker, E. L. (2005). Classification of learning outcomes: Evidence from the computer games literature. *The Curriculum Journal*, 16.

Twenge, J.M., and Kasser, T. (2013). Generational changes in materialism and work centrality, 1976–2007: *Associations with temporal changes in societal insecurity and materialistic role modeling. Personality and Social Psychology Bulletin*, 39 (7).

Wilkinson Ph. (2016). A Brief History of Serious Games, *Springer*, Switzerland.

Wouters P., Spek E., Oostendorp H. (2009). Current practices in serious game research: A review from a learning outcomes perspective, *Research Gate.*