## EDU WORLD 2018
## The 8ᵗʰ International Conference

# REINFORCING THE PERSONALIZED LEARNING EXPERIENCES BY THE USE OF GAME-BASED LEARNING

Soare Emanuel (a)*
*Corresponding author

(a) University of Pitesti, Romania, emisoare@gmail.com

## *Abstract*

The paper is focusing on the relevance of the concept of game-based learning (GBL) that become one of the most innovative approaches of today teaching and learning. It explores the ideas of the possibilities teachers have to rethink their educational practices by including in the process of curriculum design, the digital based learning activities. As one of the newest tendencies in the theoretical and methodological approaches of the learning process, the game-based learning has the capacity to reform the daily practices in postmodern schools being more effective than traditional instructional strategies. It emphasizes also the important advantages of the gamification of school curriculum that promotes the use of specific game elements like points, badges, leaderboards, competition, storytelling and achievements and their uses in a non-game setting. The research focuses on the ways to design a more relevant learning experiences that foster learning in a risk-free environment where students can make mistakes, work toward a goal, and experiment in an engaging and cooperative environment. As a multi-sensory approach to learning, it challenges students to approach learning by using game specifics as visuals, soundtracks, story lines, and thus, facilitating personalized learning experiences. Using its core elements like competition, engagement, immediate rewards, reinforcements and feedback, the game-based learning will contribute to a more real-life linked learning experiences and benefits. There are emphasized the most important learning principles that GBL will address and that can reinforce the process of development of student's key-competences that the European educational systems aim at.

**Keywords:** Curriculum design, game-based learning, gamification.

## 1. Introduction

The concept of *game-based learning* can be traced back in the late 1070 when the Oregon Trail Game was developed by Rawitsch, Heinemann, and Dillenberger. The game was firstly designed to teach students about the realities of 19th century pioneer life on the Oregon Trail. In this game, the player will assume the role of the wagon leader that guides his party of settlers from Independence, Missouri, to Oregon's Willamette Valley over the Oregon Trail via a Conestoga wagon in 1848. In here, the concept of GBL can be easily understood by identifying the specifics of the game as a pedagogical tool that can be used in teaching and learning activities. As Salen and Zimmerman states, a *game* can be defined as a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome (Sauman, 2009). Other researchers show the fact that games can play an important role in developing student's self-confidence, reducing the gap between quicker and slower learners, encourages creativity and divergent thinking (Fuszard, 2001, as cited in Boyle, 2011).

There have been identified the following most important *elements* that comprise a *game*. As Sauman (2009) states, the game elements can be defined and grouped into the following categories: a) proceeds according to rules that limit players; b) conflict or contest; c) goal/outcome-oriented; d) an activity, process or event; e) involves decision-making; f) not serious and absorbing; g) not associated with material gain; h) outside ordinary life; i) creates special social groups; j) voluntary based; k) uncertain quality; l) make-believe or representational; m) inefficient; n) resources and tokens; and o) a form of art.

In this context, *GBL* relates with the use of games to enhance the learning experience and can be defined as an innovative approach to learning that is derived from the use of computer games that has proven educational value or various software applications that use games for teaching and learning purposes such as learning support, teaching enhancement, assessment and evaluation of learners (Tang, & El-Rhalibi, 2009).

As Jones (2017) proposes, we can identify six main benefits of game-based learning that must be taken into consideration in designing the learning experiences of students:

- Increases a child's memory capacity,
- Computer & simulation fluency,
- Fosters fast strategic thinking and problem-solving,
- Develops hand-eye coordination,
- Supports children with attention disorders,
- Skill-building (map reading).

The benefits of GBL are clear as they are in accordance with the most important learning principles emphasized by the pedagogical theories: learning through experience, learning through play, situated cognition, interactive instruction, personalized learning experiences.

## 2. Problem Statement

The understanding of game-based learning (GBL) and its efficient use in school activities starts from identifying its *conceptual structure* that this research is proposing:

- The definition of the game-based learning,
- The gamification and its impact on curriculum design,

- The multi-sensory approach to learning,
- The addressed learning principles,
- The enhanced personalized learning experiences.

In order for a better use in the school context of GBL it is important to have a clear definition of its core and specific elements that differentiate this type of learning from other kinds of learning that teachers use in their current teaching practices. The GBL conceptual structure allows teachers to design a specific learning environment that use game specifics in order to promote multi-sensory learning of students. Thus, are facilitated the enhanced personalized learning experiences of students that emphasize the most important principles of learning used in GBL.

## 3. Research Questions

The research focused on several questions related with the conceptual structure of the concept of game-based learning. They refer to the following: How can GBL can be defined? How gamification can influence the curriculum design process? How can we create a multi-sensory approach to learning? What are personalized learning experiences and What are the most important principles of GBL.

## 4. Purpose of the Study

The present study aims at emphasizing the importance of a clear understanding of game-based learning and its impact on students learning experience through school curriculum. It intends to describe the conceptual structure of GBL and to point out the principles that curriculum designers must follow in order to promote a multi-sensory approach to learning and to create enhanced personalized learning experiences relevant for the knowledge-based society.

## 5. Research Methods

The research carried on for this paper used the specific methodology in education sciences, combining the qualitative methods of study with document analysis that focused on a historical, hermeneutic, synchronic and diachronic interpretative approach.

## 6. Findings

Starting from the definition of GBL as *the use of specific designed (digital)games with educational aims in order to facilitate a multi-sensory approach to learning in order to better motivate and engage students toward the attainment of the educational goals*, we must focus on identifying the most important elements of games that can be used in designing the school curriculum.

The *games* that can be used as instructional models in school must present clear rules, a plot, specific objectives and challenges. The ways the player interacts with these elements describe the *gameplay*. The specific construct of the gameplay reveals the *game mechanics*. The game mechanics are the building blocks of *gamification*.

Gamification is the process of integrating the game mechanics into school activity and of applying them to non-game experiences in order to better motivate and engage students in the learning activities. It

amplifies the effect of a learning experience designed in the curriculum by applying the motivational techniques that make games engaging for the players.

Including gamification in the school curriculum mean the design of specific game mechanics that can motivate and engage students in the learning process toward the achievement of educational aims.

The most important game mechanics that can be used to design new learning experiences for students can be the following: points, levels, missions, badges, leaderboards, unlocks, events feed, notifications, quizzes and progress. They all contribute to new enhanced learning experiences of students that facilitate competition, collaboration, community, collection, achievement, surprise, progress and exploration.

Thus, is made possible the link toward a new concept of learning e.g. *multi-sensory learning*. The concept is based on a new approach of instruction named *multisensory instruction*. It is focused on designing teaching and learning activities that engage more than one sense at a time, also known as VAKT (visual-auditory-kinesthetic-tactile).

It facilitates the engagement of the students in class activities more than traditional learning settings and contribute to the development of personalized learning experiences. It happens mostly because the use of GBL is relying upon the better possibility of the teachers and students to control the learning environment and thus, becoming more engaged in the learning process and being able to properly contextualize the learning experiences in the widely life environment. It also contributes to the development of the ability to recognize and rapidly diagnose the dynamic contextual variable inherent in an event or circumstance and results intentional adjustment of behaviour in order to exert appropriate influence in that context (Abrams, 2009).

In another context, Hwang et all. (2008) identifies several important benefits of the use of GBL in the classroom that are closely linked with the promoting of enhanced personalized learning experiences of students:  a) collaborative problem solving, b) the collection of data in the real world via observations, c) learning in the real world with online support/guidance, d) problem-solving using experiments, and e) real object observation.

We can add these pedagogical benefits with the new learning environments identified by Hirumi, Appelman, Rieber, & Van Eck, (2010): a) role play, b) online instruction, c) single and multi-player games, d) live and virtual simulations, e) augmented or mixed reality, and f) augmented virtuality. Those new learning environments have specific characteristics and contribute to the design of a more relevant learning. Also, as Popescu and Iordăchescu (2015, p. 2315) states, students need to get at least the basics of intercultural education, alongside their linguistic education, if we are considering the globalisation and the mobility and volatility of the labour market on the one hand, and the need of future teachers to adapt to the new generations' demands and expectations.

## 7. Conclusion

Game-based learning become today one of the most important determinants of a new learning environment schools must facilitate for 21st Century learners. The game specifics that can influence learning cannot anymore be ignored. The curriculum designers should consider the innovative character of this new learning approach and its powerful engaging capacity by clarifying the particularities of the GBL concept

and its implications on education, continuing with the understanding of the gamification and its impact on the curriculum design.

In this context the discussions about the multi-sensory approach to learning and the addressed learning principles fosters a more productive development of the enhanced personalized learning experiences, core element of instruction facilitated by the wide use of GBL in schools.

## References

Abrams, S.S., (2009). A gaming frame of mind: digital contexts and academic implications. *Educational Media International,* 46(4), 335-347.

Boyle, S., (2011). Teaching Toolkit. An Introduction to Games based learning.

Fuszard, B., (2001). Gaming. In Lowenstein, A. J., Bradshaw, M. J. & Fuszard, B. (Eds.) Fuszard's innovative teaching strategies in nursing. 3rd ed. Gaithersburg, MD, Aspen Publishers.

Hirumi, A., Appelman, B., Rieber, L., Van Eck, R., (2010). Preparing Instructional Designers for Game-Based Learning: Part 2, *TechTrends, 54,* (4), July/August.

Hwang, G. J., Tsai, C. C., & Yang, S. J. (2008). Criteria, strategies and research issues of context-aware ubiquitous learning. *Journal of Educational Technology & Society, 11*(2), 81–91.

Jones, C., (2017). 6 Basic Benefits of Game-Based Learning, Available online at: https://www.teachthought.com/technology/6-basic-benefits-of-game-based-learning/

Popescu Teodora, Iordachescu, G. D. (2015). Raising Students' Intercultural Competence through the Process of Language Learning. *Procedia - Social and Behavioral Sciences,* 197, 2315-2319. https://doi.org/10.1016/j.sbspro.2015.07.259

Tang, H, El-Rhalibi, (2009). Introduction to Games-Based Learning. Games-based Learning Advancement for Multisensory Human Computer Interfaces: Techniques and Effective Practices (Eds: Connolly, T.M., Stansfield, M.H., Boyle, E.). Idea-Group Publishing: Hershey.

Sauman, C., (2009). Digital Game-Based Learning in Higher Education (pp. 1120-1124), in Mehdi Khosrow-Pour, D.B.A., Encyclopaedia of Information Science and Technology, Second Edition.