

THE OPPORTUNITY OF INTRODUCING SERIOUS GAMES IN TEACHING ENGLISH FOR SPECIFIC PURPOSES - A STUDY CASE ON PLAYING “SIMPLYCYCLE” SERIOUS GAME

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Abstract.*In the last few years serious games (either digital games or board games) started to be used extensively in several developed universities due to the safe environment in which the future specialists could exercise different scenarios specific to their field of study. Teachers included them into their classes not only because serious games can provide the students with the necessary knowledge and skills for their future jobs, but also because the games could also contribute to the improvement of other skills related to communication, critical thinking, problem solving, creativity and innovation that are so much requested today on the labour market. The present study has in view the opportunity and attractiveness of introducing the serious games in the toolbox of the English teachers when introducing and practicing English for specific purposes. The study is based on the application of a questionnaire that measures the attractiveness among students to learn English for Environmental Sciences by playing a board serious game named Simplycycle. The game has been played by more than 100 students organized in teams of five students with different levels of knowledge (beginners, intermediates and advanced).The data provided by the questionnaires showed that the students presented a high degree of involvement while playing the game, a high interest in playing other serious games and that the tested serious game was used successfully even in multi-level teams.*

Key words: *board serious games, digital games, game-based learning, Simplycycle*

1. INTRODUCTION

During the last decade there have been undertaken several studies focused on the usage of serious games to educate, motivate and even change the social behavior of the players. Serious games proved to be more than just ‘fun’(Pomerantz, 2007, Michael & Chen, 2006, Prensky, 2001, Zyda, 2005, Ersoz, 2000). They were considered engaging, motivating, meaningful and with a great impact upon the players. Their educational impact exceeded the limit of knowledge acquisition or skill practice (Johnson, Eidola 2005) and went further and included specific learning (games with a purpose), critical thinking, creative thinking, problem solving, exploration and collaboration learning (Rieber, 1996, Mitchell & Savill, 2004).

The serious games started to make their way in fields such as: economics, medicine, military, weather forecast, archeology, science and languages, because they could provide the players the necessary context of 'playing safe' in a controlled environment.

Many studies also started to approach the topic of game-based learning in the field of teaching/learning of foreign languages (Sørensen and Meyer, 2007). Most of them were focused on young learners (elementary schools, middle school and high school) considering that playing is a natural way of learning during childhood and adolescence. Hence, the prevalence of developed serious games for these categories of age group (39% of all the games). The studies that targeted academic and adult education were considered less prevalent also because the number of serious games designed for this category was insignificant (16%) (Ratan R. & Ritterfeld U., 2009).

However, in the last few years there is a certain preoccupation from the part of several departments within universities or private companies for increasing the prevalence of such games in the academic field, given the fact that many studies and statistics show the inadequacy of the current educational system to face the challenges posed by a continuously changing labour market. New jobs and new business models emerge every year to satisfy the needs of the customers/consumers. But the educational system is rigid and still not able to adapt to the new trends of the present world economy. The students lack skills that could help them in finding suitable jobs or in developing their own business (start-ups).

In Romania, educational games are of a very low importance in terms of formal (or even informal) education at any level and for any age group. This situation happens mostly thanks to the costs that a serious game might involve (paying for the license), lack of infrastructure (for digital games), and difficulty in finding games that fit the curriculum.

Many authors limit the term 'serious game' to digital games (Michael & Chen, 2006) even if there are several definitions (Garris, Ahlers & Driskell, 2002, Vogel, 2006) that take into account the following directions that could be applied to all types of serious games: they are goal-oriented, stimulate competition and motivation, they have agreed rules (Lindley, 2004) and provide feedback (Prensky, 2011). Other definitions consider that the serious games encapsulate and frame an array of technologies, platforms, applications and experimental environments that can be found under the form of video games or mixed reality/media (Marsh, 2001, Marsh & Costello, 2012).

In this paper, a different type of serious game will be considered – the board serious game *Simplycycle* designed for Environmental Sciences. Even though the game *Simplycycle* is a board game and not a digital game, it includes all the elements that characterize a serious digital game. Thus, the game has a **story** of its own – it is about an island whose representatives invite a team of consultants (team of players) to achieve a positive footprint for it by improving all the processes and products that can be found on the island. The more complex the story and characters, the easier it is to motivate the players to get involved.

Other element specific to a serious game is the **game dynamics** which is given by passing from one level to another, until the players reach the third level which is the most complex one. The players are taken from level one which provides information and procedures necessary to set the course for cyclical metabolism, to level two where factors that support the flow of materials are named. The last level offers the perspective of the bigger picture when the students can notice that the product cycles are linked with other

cycles. From the perspective of language learning, to progress in a game, the players must interact verbally with each other, thus they need to use the language in a real and meaningful way (Peterson, 2010, Schuna, 2010). The students are exposed to certain cultural and linguistic knowledge that they cannot find in the classroom or somewhere else. The diversity of the situations encountered in the game will trigger different kinds of language use, such as: making requests, asking questions, giving explanations, asking for alternative solutions. (Zheng, Newgarden, & Young, 2012)

The **immediate feedback** can be provided either by the teacher or by the Expert Cards which offer a solution for each raised issue. A continuous feedback will determine the player to repeat and reformulate some certain statements (Godwin-Jones, 2014) in different contexts. Thus, some language structures and vocabulary can be reinforced by repetition with increasing the level of difficulty and complexity of the language used.

Real life situations are also present in the game. The student is asked to come up with solutions for different everyday products. It is a well-known fact that many of the products that we use are harmful for us, but also for the environment due to the toxic materials they contain or their vicious manufacturing processes. Thus, the student must replace some certain materials with others that are environmentally-friendly, that can be easily found and can be recycled endlessly. Putting the students at the core of the problem, and asking them to find solutions, the game reproduces a real situation. The last element required by a serious game is that its main objective is **learning**. According to its designer (Sonja Esser), the objectives of Simplycycle are multiple – to raise awareness about harmful substances in everyday life products; players will get an insight in our interdependence with nature; players can learn and test their knowledge in the field of eco-effective design; the simulation prepares for the implementation of own projects (possibility to develop new business models, start-ups); different mindset of environmental problem solving.

2. MATERIAL AND METHOD

Our study is based on using the board serious game Simplycycle. According to its author, the game is inspired by the design concept of Cradle-to-Cradle and has as a main objective to teach the players the principles and implementation of an eco-effective design philosophy. In other words, products must be designed in such a way that at the end of their life time, they can be easily broken down into parts that can be reused under different forms by introducing them into a technical cycle (recycled) or composted by introducing them into a biological cycle.

The game has been tested for the first time in 2013 during the Erasmus project **Cradle-to-Cradle in Higher Education** (www.c2cineducation.com). At that time, the game was considered an innovative teaching/learning instrument that was successfully used by 36 students from four different countries. Even if the students had different levels of English, ranging from beginners to advanced students, they could perform very well in teams. This fact encouraged us to consider Simplycycle as a suitable game also for teaching English for Environmental Sciences in the classroom.

Therefore, the game was played by about 100 students in 3 sessions according to the instructions offered by the designer of Simplycycle. Each group consisted of 5 persons and the duration of the game was about 2 hours for each session. Each group received a

set that included the Game Board showing the usual linear production model TAKE-MAKE-WASTE and the two cycles for eco-effective design: technical cycle and biological cycle. The Board was accompanied by the Product Cards. Each card presents one product, such as a TV-set, computer, food package, brick, etc., for which the player finds information about the materials, risks posed by the respective materials, or the production process and recycling possibilities. Expert Cards are those cards that offer the immediate feedback to the players in case there is no teacher/instructor around, or in the case the players cannot find a solution for the product they need to discuss. Action Cards are the cards that will ensure the dynamics of the game. There are three types of Action Cards corresponding to the three levels of complexity of the game. Cycle Cards are those cards whose role is to push creativity further and to show our interdependence with nature.

After playing the game, a questionnaire was applied to all the players. Totally, there were 103 players, but only 92 questionnaires were filled out and could be taken into account. The students were asked to fill in the questionnaire at home in order to have some time for reflection and to send it back by e-mail to the English teachers. The students that played the game were attending three different study programmes: Environmental Sciences, Food Engineering and Constructions. For each group of students, the teachers selected the Product Cards specific to their field of study.

The questionnaire includes 10 questions that can be divided into questions meant to collect socio-demographic data (division of students according to gender, age, proficiency in English), questions that had in view the game Simplycycle (positive and negative aspects of the playing experience; suitability of the game in teaching English for Environmental Sciences; and general questions about students preferences for board games or computer games, or the opportunity to include other serious games in the teaching and learning process.

3. RESULTS AND DISCUSSIONS

According to the data collected from the questionnaires, there were 92 valid questionnaires, filled out by 56 female students and 36 male students. All the students ranged in the age group of 18-22 years old and they were divided into three levels of proficiency: 21 beginners, 60 intermediates and 11 advanced level students (multi-level proficiency class). The results revealed that no student has ever experienced playing a serious game during the learning/teaching process. They were all at their first experience.

More than two thirds of the students (72.8%) enjoyed playing the game very much, 11.96% enjoyed playing the game, 11.87% did not enjoy it so much, and 4.35% did not enjoy it at all. As concerns the degree of difficultness when playing, the results show that 66.30% of students did not find the game difficult to be played; 20.65% find it as not so difficult, 8.69% found it difficult and 4.35% found it very difficult. The results obtained so far can lead us to the conclusion that in a multi-level proficiency class, serious games can be used as a useful tool in assisting the teaching/learning process as long as most of the students considered the game Simplycycle as being enjoying and not difficult to be played.

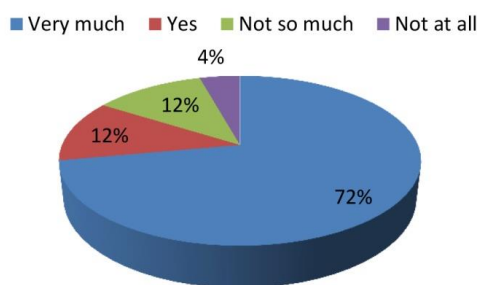


Fig.1 Students Enjoying Playing Simplycycle

The elements that posed some difficulty to students in playing the game were: the specific information (related to environmental sciences, chemistry, and physics) needed to play the game properly; finding the best solutions for the given products and the rules of playing the game. At a closer look, the game asks for solid knowledge of chemistry, physics and other multi-disciplinary disciplines that sometimes are difficult to be correlated by the student/player. The team must come with all their knowledge and decide which solution is good or not and the decisions must be supported by scientific facts. Considering that all the students included in the research were in their first and second year of study, it is easy to understand why finding the best solution or the right answer was a difficult task. The positive aspect of playing the game within the English class is that the focus of the teacher is more on the usage of language and not the reliability of the information provided.

The usage of English language, ranked on the fourth place, was mentioned by 16% of the students as being one of the difficult aspects of the game. This percent is probably reflected by a part of beginners who did not feel comfortable while playing the game and therefore one of the conclusions is that serious games cannot be played by any student, regardless of his/her level of proficiency. Playing a serious game requires not only solid knowledge in the environmental field (as in our case), but also good knowledge of the vocabulary specific to the respective domain, that is in English for Environmental Sciences.

Furthermore, the game **Simplycycle** was considered very suitable for teaching English for Environmental Sciences by 61.96% of the total number of students that took part in the study. Other students (22.83%) considered the game as being suitable, while 10.86% of the students considered as being not so suitable, and 4.35% as not being suitable at all.

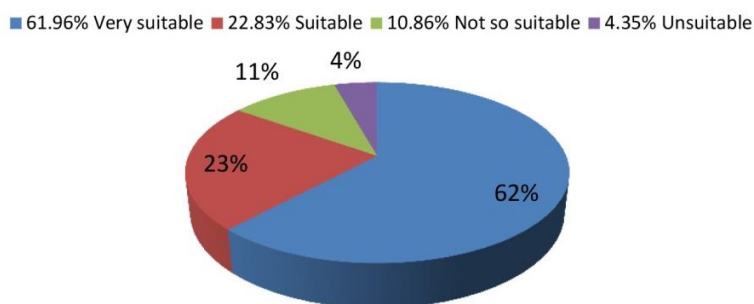


Fig. 2 Opportunity of Using Simplycycle in Teaching ESP

The data provided by the questionnaire also showed that there is no significant preference for playing board games or digital games. However, there is a tendency towards digital games (54.35%) instead of board games (45.65%). These results could open up a new direction of study regarding the division of the students according to their gender and level of proficiency. It would be interesting to identify what categories of students feel/donot feel comfortable with using the technology in the learning process and what are the reasons that trigger their choice to one type of game or the other.

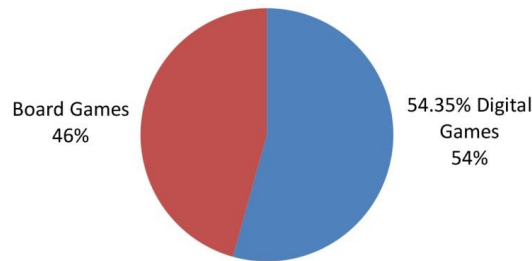


Fig. 3 Preference for Different Serious Games

The last question that provided information on the desire of the students to repeat the experience of playing other similar games within the English class showed a clear opening of the students towards such educational tools. Thus, 86.96 % of the students would like to repeat the experience very much, 8.69% would just like it, 3.26% wouldnot like it so much and 1.09% wouldnot repeat it.

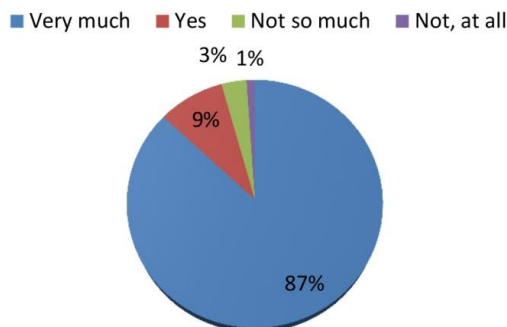


Fig. 4 Playing Other Serious Games

4. CONCLUSIONS

In the context of language learning/teaching, Simplycycle stimulates motivation and authentic communicative practices, being thus a framework that provides a meaningful context for language acquisition and practice. The player is immersed so deeply into the experience itself that the language he/she uses is not so important anymore. Playing the game is all about the action where it might lead next, creating, thus, the premises of a

context-based form of language acquisition. The results provided by the questionnaires showed that the students presented a high degree of involvement while playing the game, a high interest in playing other serious games and that the tested serious game was used successfully even in multi-level teams.

Even if the serious games can be considered as reliable frameworks within which the language acquisition process is possible, they cannot be played by the students/players who do not have a minimum knowledge of English that is specific for the target domain of the game. This fact leads us to a more general conclusion that serious games need a careful analysis before being selected by the teachers, so that they could comply not only to the requests of the curriculum but also to the needs and skills of the students/players. Thus, variables like age, gender, level of proficiency, are important factors in selecting an efficient serious game to be played by the students during the English class.

Further directions of study can be opened towards the usage of digital games or board games by taking into account the possible challenges and opportunities that each type of serious game can pose.

REFERENCES

- Ahmed Awad Amin Mahmoud & Ziyad Ahmed Tanni, "Using Games to Promote Students' Motivation towards Learning English", in *Al-Quds Open University Journal for Educational & Psychological Research & Studies* - Vol. 2 - No. 5, (2014): 11-33.
- Callois, R., *Man, Play and Culture*, New York: The Free Press of Glencoe, 1961.
- de Freitas, S., Oliver, M., "How can exploratory learning with games and simulations within the curriculum be most effectively evaluated?" in *Comput. Edu.* 46(3), 2006:249–264.
- Ersoz, A., "Six games for EFL/ESL classroom", in *The Internet TESL Journal*, 6(6), 2000, Accessed in May 2017: <http://iteslj.org/Lessons/Ersoz-Games.html>.
- Garris, R., Ahlers, R., & Driskell, J. E., "Games, motivation, and learning: A research and practice model", in *Simulation & Gaming*, 33, 2002: 441–467.
- Johnson- Eilola, *Toward a New Theory of Online Work*, Cresskill, NJ: Hampton Press, Inc, 2005.
- Konzack, L., *Edutainment: leg og lær med computer mediet. [Edutainment: Play and Learn with the Computer Media]*, Aalborg: Aalborg Universitetsforlag, 2003.
- Kossuth, Karen C., "Suggestions for Comprehension-Based Computer-Assisted Instruction in German" in *Die Unterrichtspraxis* 17,1, 1984.
- Lindley, C.A., "Narrative, game play, and alternative time structures for virtual environments", in S. Göbel, U. Spierling, A. Hoffman, I. Iurgel, O. Schneider, J. Dechau & A. Feix (Eds.), *Lecture Notes in Computer Science: Vol. 3105. Technologies for Interactive Digital Storytelling and Entertainment* Heidelberg: Springer Berlin, 2004: 183-194.
- Marsh, T., "Serious Games Continuum: Between games for purpose and experiential environments for purpose" in *Entertainment Computing* 2(2), 2001: 61–68.
- Marsh T. and Costello B., "Experience in Serious Games: Between Positive and Serious Experience", M. Ma et al. (Eds.) in *SGDA, LNCS 7528*, 2012: 255–267
- Michael, D., Chen, S., "Serious Games: Games that Educate, Train, and Inform", in *Thomson Course Technology PTR, USA*, 2006.

- Peterson, M., "Computerized games and simulations in computer-assisted language learning: A meta-analysis of research", in *Simulation & Gaming*, 41(1), 2010: 72–93.
- Pomerantz, A. & Bell, N., "Learning to play, playing to learn: FL learners as multicompetent language users", in *Applied Linguistics* 28(4), 2007:556–578.
- Prensky, M., "Fun, play and games: what makes games engaging", in *Digital Game-Based Learning*, McGraw-Hill, 2001.
- Prensky, M., *Digital Game-Based Learning*, New York: McGraw-Hill, 2001.
- Ratan Rabindra & Ritterfeld Ute, "Classifying Serious Games" in *Serious Games: Mechanisms and Effects*, edited by Ute Ritterfeld, Michael Cody, Peter Vorderer, Routledge Taylor and Francis Group, New York, 2009.
- Rieber, L.P., "Seriously considering play: Designing interactive learning environments based on the blending of microworlds, simulations, and games", in *Educ. Technol. Res. Dev.* 44(2), 1996:43–58.
- Godwin-Jones, Robert, "Games in Language Learning: Opportunities and Challenges" in *Language Learning & Technology*, 18, (2), 2014: 9-12, Accessed in May 2017 <http://llt.msu.edu/issues/june2014/emerging.pdf>.
- Schuna, Carly, *The Advantages of Learning Games for Kids*, Live Strong, 2010, Accessed in May 2017, <http://www.livestrong.com/article>.
- Sørensen, B.H., Meyer, B., "Serious games in language learning and teaching – a theoretical perspective", in Proceedings of the 3rd International Conference of the Digital Games Research Association, 2007: 559–566.
- van Eck, R., "Digital game-based learning: It's not just the digital natives who are restless", in *Educause Rev.* 41(2), 2006:16–30.
- Vogel, J. J., Vogel, D.S., Cannon-Bowers, J., Bowers, C. A., Muse, K., & Wright, M., "Computer gaming and interactive simulations for learning: A meta-analysis", in *Journal of Educational Computing Research*, 34, 2006: 229–243.
- Zheng, D., Newgarden, K. & Young, M., "Multimodal analysis of language learning in World of Warcraft play: Linguaging as values-realizing", in *ReCALL* 24(3), 2012:339–360.
- Zyda, M., "From visual simulation to virtual reality to games", in *IEEE Computer*, 2005, Accessed in May 2017 at <https://pdfs.semanticscholar.org/a459/2975c28861b8aae4870e23612388cdfda67a.pdf>.