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SERIOUS GAMES IN HIGHER EDUCATION: STUDENTS' PERCEPTIONS - THE CASE OF SCHOOL OF FRENCH OF ARISTOTLE UNIVERSITY OF THESSALONIKI

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Abstract

In recent times there has been a great evolution in the creation of educational games, known as Serious games (SGs). SGs are environments that were designed based on a playful approach to learning for educational purposes.

Empirical studies and research have shown that SGs can provide innovative and student-centered pedagogies to players and help them become autonomous learners. Furthermore, they can enhance students' motivation and engage them in inductive experiential learning.

The purpose of this paper is to present findings of a study that was carried out in the School of French of Aristotle University of Thessaloniki and which explores our students' perceptions of serious games.

Specifically, we proposed to 30 undergraduate students of the School of French to use SGs as part of learning activities that were designed for learning the French language and precisely games, which can be used to improve students' lexical, grammatical and orthographic competence. This case study took place during class time but also outside timetables hours. On completion of the game, students filled in a survey, which focused on students' prior experiences of ICTs and game-based-learning and their perceptions of the use of SGs in the development of linguistic competences.

Therefore, in this paper, we will first mention the educational benefits of the use of SGS in Higher Education (HE) as they appear in previous research. We will then describe the methodology that we use in the current study and present the results. Finally, we will discuss the findings, draw conclusions and talk about the potential of the use of SGs in HE.

Keywords: Game-Based Learning, Serious Games, Language Learning, Higher Education, Linguistic Competences.

1 INTRODUCTION

Students nowadays, *the Net generation*, learn in a different way, have different learning styles and understand the media much better than their predecessors did, because they have grown up in the digital world [1], [2]. Millennials multitask several activities at once, they are on Instagram every chance they get, and they use their mobile devices not only for communicating but also for playing games, finding information and learning. These characteristics impact the teaching and learning process, have implications for instructional design, course delivery, and teacher-student interactions [3], [4]. Today's students believe that they should have been engaged in the educational environments as they are by digital technologies. Many researchers claim that Serious Games (SGs) have the power to enhance and reinforce students' motivation, to promote understanding and enjoyment and the potential to fulfill students' educational needs and expectations [5] [6], [7], [8].

For the above reasons, during the last decades, studies focusing on the potential of SGs in education have increased and several types of projects were established all over the world in order to find adequate approaches to support learning with SGS and also to investigate the perceptions of learners towards the use of SGs for learning. However, most of these studies focus on younger age learners so we don't have enough findings of empirical research about Higher Education (HE) students' perceptions of SGs for formal learning. Therefore, we have decided to explore students' perception of School of French Of Aristotle University of Thessaloniki towards the use of SGs for learning and the impact of gaming habits and pedagogical expectations in this regard.

In this paper, we will first mention the educational benefits of the use of SGs in Higher Education (HE) as they appear in previous researches and then we will describe the methodology that we use in the current study and present the results. Finally, we will discuss the findings, draw conclusions and talk about the potential use of SGs in HE.

2 THE USE OF SERIOUS GAMES IN HIGHER EDUCATION

Different definitions of serious games have been formulated during the last decade. Abaza and Steyn (2008, cited in Sauv  et al.) [9], for example, describe them as “digital with strong computer constituents, including a challenge and objectives, while offering entertainment, a scorekeeping system, and the development of competence, knowledge, and attitude change”. Zyda [10] defines them as “mental contest, played with a computer in accordance with specific rules, that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives.” In spite of the multiplicity of the definitions available, most researchers agree that SGs are digital games used for purposes other than mere entertainment. Other benefits cited in the literature are that SGs allow learners to experience situations that are impossible in the real world for many reasons such as safety, cost, time, offer instant feedback and the opportunity to learn by doing and they can also help learners in developing social, cognitive, visual, spatial and motor skills and transferable IT skills [11], [12], [5] [8]. In addition to these advantages, it is also argued that SGs can provide models of good learning innovative practices and can transform the learning process, creating a new learning culture which better suits learners’ needs and interest [5], [8]. The most important benefit according to the authors, is that SGs offer to learners participating in game-based learning environments an immediate, adaptive and informative feedback about their performance, skills, and knowledge. Adaptive feedback permits learners to learn from mistakes and failures without becoming discouraged [13].

Today’s students commonly called as the *Net generation*, *millennials*, or *digital natives* are dependent on technologies to communicate, gather information, extend social experiences and be entertained. [14] Moreover, they are oriented to visual media and they are perfect multi-taskers [15]. Therefore, scholars recognizing the inefficacy of current HE pedagogical methods practices and approaches have shifted their attention to SGs [13], [14], [16].

HE has already incorporated SGs into curricula. For example, the Learning Lab at the University of Pennsylvania’s Wharton School the last decade has released several web-based simulations on the Harvard Business Publishing for Educators website to teach business, economics, and marketing. The *Entrepreneurship Simulation* the *Marketing Simulation: Customer Centricity* and the *Negotiation Simulation: OPEQ* are a very small example of what The Wharton School has done in the field of serious gaming. These SGs cover different subjects such as business models, entrepreneurship, marketing, negotiation, sales, venture capital, competition, economics, game theory, microeconomics, customer & client analysis, customer lifecycle and relationship management, market segmentation and marketing.

Health professions education has also recognized the value of serious gaming as a result in the last decade, many SGs in the field of e-health has been developed covering a wide variety of aspects such as surgeon training, radiology operation, cardiopulmonary resuscitation (CPR) and patient care [13], [17].

Rooney piloted a serious game called *Serious Gordon* that was designed with specific learning objectives: developing and understanding of the basic principles of food safety and environmental health and transferring of learning from the virtual world to the real. [16].

However, we cannot take for granted, without primary research, that all students have a positive attitude towards the use of SGs as a pedagogical tool in HE. For this reason, an empirical study was conducted to examine whether students of School of French in Aristotle University are positive towards serious gaming.

3 METHODOLOGY

The main objective of this study was to answer a specific research question “What are students of School of French perceptions towards the use of SGs for formal learning in HE? Do they really believe that the digital game-based learning is effective? Do they really have a positive attitude towards learning with SGs ?”. In order to answer these research questions, we carried out a study in the School of French with thirty undergraduate student participants. Specifically, we proposed to the participants to use three SGs as part of learning activities that were designed for learning French language and precisely games, which can be used to improve students’ lexical, grammatical and orthographic competence. This case study took place during class time but also outside timetables hours.

The games proposed to the participants were developed by The Collegial Centre of Educational Materials Development (CCDMD) that produces materials for a wide range of courses and programs for students, as well as specific materials aimed at improving English and French language skills. We precisely proposed three games: *Synotetris*, *Vocabulaire de alimentation*, and *DEFI: orthographe d'usage* that mostly focuses on lexical, grammatical, semantic and orthographic competences. All of them offer an informative feedback to players with satisfactory explanations and the players have the time to observe their errors they have done. All of them have different modules and only *Synotetris* have three levels of difficulty. Additionally, they have game features that offer to players the possibility of a playful learning. Thus, during two weeks, four pilots were carried out with two student groups, fifteen students per group, on the third university year, in the computer laboratory within the School of French. Each pilot lasted approximately two hours. On arrival, we have explained to the students the purpose of the study. During gameplay, all students were observed and supported. On completion of the game, students completed an online survey with six multiple-choice questions and one open-ended. These questions focus on students' prior experiences of ICTs and game-based-learning and their perceptions of the use of SGs in the development of linguistic competences.

4 RESULTS

According to the data analysis, 36% (n=11) of participants described themselves as either familiar or very familiar with New Technologies (NT) and (fig.1). Half of them are enough familiar with NT (n=15) and only 13,3% of (n=4) participants did not consider themselves familiar enough with NT.

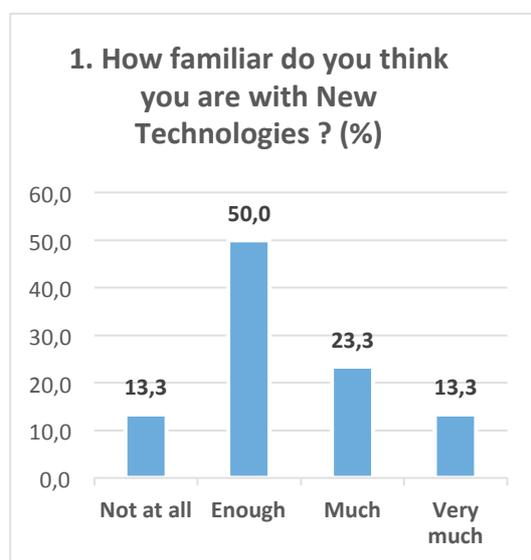


Figure 1. Students' familiarity with New Technologies.

Those who do not have played at all with computers games before the pilot project represents 20% of the answers. The great majority of students, 80% (n=24) consider themselves to be gamers (fig.2, fig.3), half of them (n=12) play games a few times per month and a third of them (n=7) play games a few times per week. Only one student is a serious gamer.

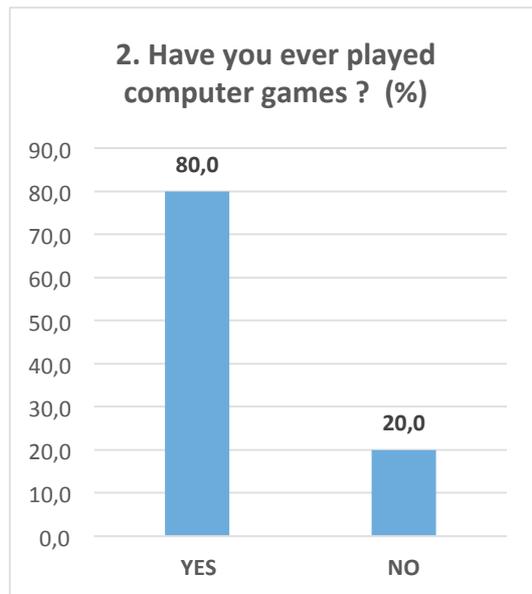


Figure 2. Participants' as gamers.

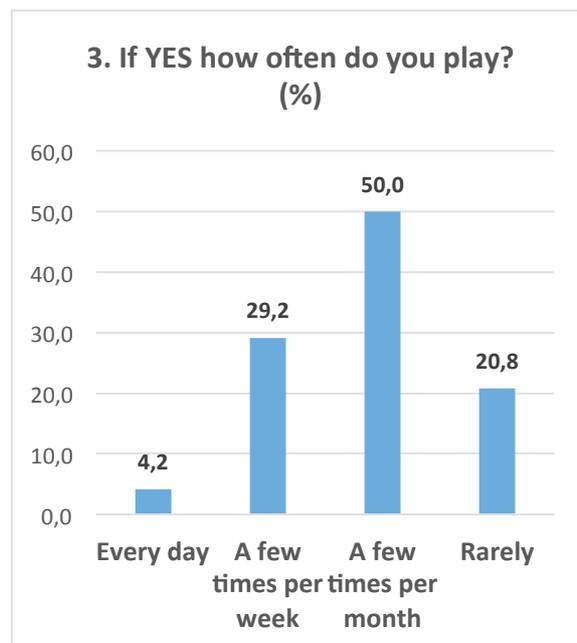


Figure 3. Participants' gaming experience.

Most students (76%) agreed that it would be easier to learn and to develop their linguistic competences via games (fig.4). However, 23% (n=7) of participants are not very positive towards digital game-based learning because they do not think that SGs could help them to improve their linguistic skills.

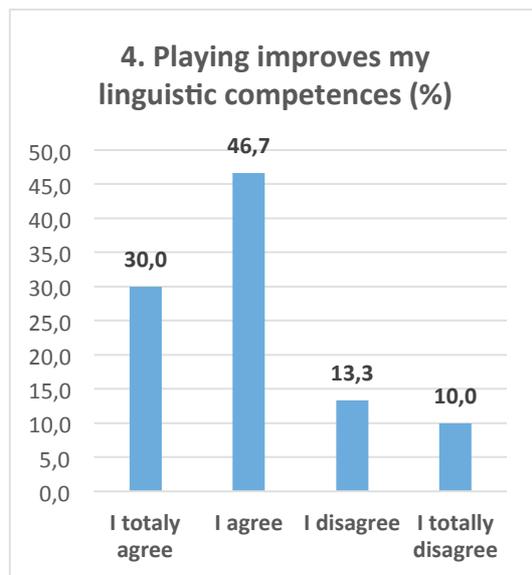


Figure 4. Serious games and linguistic competences.

As we are persuaded that the feedback should be informative rather than simply let a student know whether he or she has successfully given the right answer or not, the games used to the study offer an explicit feedback and give information about players' performance and process. Therefore, we examined whether students consider SGs as a good tool for self-assessment.

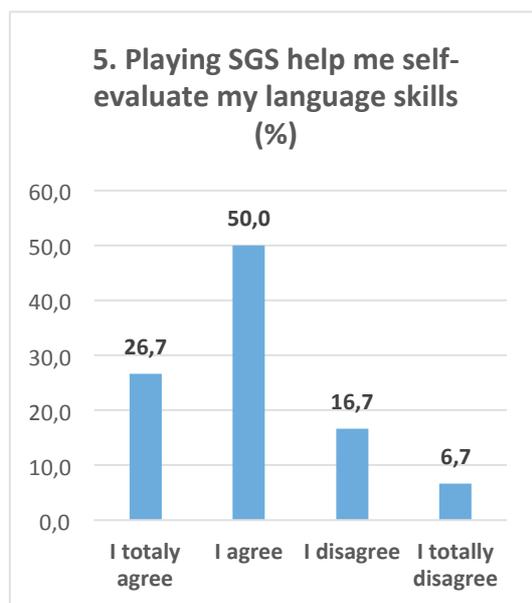


Figure 5. Games as self-evaluation tool: students' perception.

The majority of students 76% (n=22) consider that SGs can help them to self-assess their linguistic skills and they prefer this kind of evaluation than the traditional one.

The aim of the last multiple-choice question was to learn which of the game preferred the participants. Half of the participants 50% (n=15) chose *Synotetris*, 40% the game *Vocabulaire de alimentation* and only three of them like the game *DEFI: orthographe d'usage*. Then with an open-ended question students justified the reasons for their choice. According to them the entertaining aspect of the first game it is more appealing than the others. Those who preferred the second game think that it offers a very useful informative feedback and also the possibility to learn difficult expressions in the target language. The others three students choose the third game because "it was the easiest one".

During the discussion, the students who were not in favor of using serious games for learning explained that they are more comfortable within the traditional lecture-based model of teaching although they think that games are good for leisure time. These were the students who have not had previous gaming experience thus we claim that the lack of gaming experience has a negative impact on students' perception towards SGS for learning in formal education.

5 CONCLUSIONS

Serious games offer new opportunities for the development of different skills and they can support learning in higher education as they can increase visualization and creativity. For that reason, they have been incorporated into curricula. Various authors claim that serious games provoke active learner involvement through exploration, experimentation, competition and can enhance students' motivation.

Nevertheless, the literature review has shown that the use of the SGs as an educational tool in higher education remain unexplored so we have decided to conduct a field research which intends to fulfill this gap. The aim of this study was to investigate students' perceptions towards serious gaming in HE. Findings from this research indicated a positive attitude towards SGs. In fact, participants believe that games can help them develop their linguistic competences in French. Additionally, participants believe that SGs are useful tools for self-evaluation. This study also has shown that there is a relationship between IT skills and predispositions towards game based-learning. Finally, this study indicates that game attributes, feedback, and assessment have to be under consideration when we propose a game to HE students. The way in which SGs are introduced to HE students is essential to its acceptance by them. However, the authors would like to underline that the findings of this study concern this particular group of School of French students and hence may not be generalizable to students with a different academic background.

Additional research will be a necessary to examine the adequate way for embedding serious games into the higher education curricula and link the use of serious games with particular learning scenarios.

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