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Business game to promote learning in higher education

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Abstract
The current renewal of teaching methodologies that underlie the process of construction of the EHEA aims to give students a greater role in their learning, to encourage collaborative work and to develop teaching materials that facilitate autonomous work. Therefore, the aim of this study is to provide evidence of the influence of the use of business game in the improvement of the teaching-learning process. In order to carry out the study, a questionnaire was drawn up, based on the generic competences included in the Tuning Project and the Participants students of the Faculty of Economics. Results suggest that business game in the classroom motivate students to use different theoretical frameworks to analyze problems and make decisions, fostering teamwork, leadership and creativity, all of which are skills and abilities of an executive..

Keywords: *Business game; learning; Higher education.*

Introduction

Until the end of the 20th century, the teaching model was mainly based on lectures where the teacher explained the lesson in front of the students at a continuous and unidirectional pace. However, not all students are able to learn at the same time, as they differ in intellectual capacities, level of previous knowledge, motivations, values, learning styles and strategies. For this reason, higher education institutions are currently being called upon to change the educational paradigm from a model based almost exclusively on the transmission of knowledge to one based on the flexibility of the system in order to achieve the comprehensive training of individuals.

At the World Conference on Higher Education (1998) at UNESCO headquarters, the need to promote lifelong learning based on the construction of adequate competences to contribute to the cultural, social and economic development of society was identified. The concept of competence, as understood in education, is the result of the new theories of cognition and basically means knowledge of performance. Since every process of "knowing" translates into

"knowing", it can therefore be stated that competence and knowledge are reciprocal, the latter being broken down into: knowing how to think, knowing how to perform, knowing how to interpret, knowing how to act in different scenarios, from oneself and for others.

Competency-based education implies an integral development of the individual, involving a set of social and affective behaviors and cognitive, psychological, sensory and motor skills that enable a successful response to a labor or research demand (Martinková, 2020).

The inclusion of work competences in the teaching guides implies a turning point for academic institutions, which did not have this training as part of their pedagogical project. When analyzing the functions performed by an executive director, it can be seen that he/she has to use, and therefore know, a set of skills, abilities and criteria to be able to solve problems and adapt to the continuous changes in the economic and social environment.

Competency-based education requires teachers to design teaching strategies with instruments that contribute to meaningful learning, establishing cognitive bridges between what students already know and what they need to know in order to assimilate new knowledge. In this new scenario, sophisticated software, that reproduces reality with an excellent degree of accuracy, are a good tool, as it offers the possibility of observing the behavior of individuals under conditions of pressure without the company having to assume any additional cost for the mistakes made (Thoutenhoofd, 2015). By putting participants in front of problems that require their active participation, they have to make enquiries and decisions. Thus, learners ask questions, generate and explore their own theories, and through this, construct their own knowledge. Consequently, their use could complement traditional classroom activities, since mixed with the rest of the materials, they could attract students to try risky solutions, without any kind of danger, and continue participating in the simulation until they reach the learning objectives set.

Thus, the aim of this paper is to describe an experience of educational innovation with business simulators. Thanks to the use of these simulators, students will acquire and develop competences, skills and abilities that adapt to the curricular needs of a Faculty of Economics, especially in terms of critical thinking and the different ways of approaching problem solving, fulfilling the requirements demanded by companies and society.

Educational competences

A degree must provide students with the knowledge and competences defined in the syllabus in order to attain the skills required in their professional profiles and to be able to play a constructive role in society as citizens. It is therefore essential that the competences to be acquired by students are placed at the Centre of didactic planning if the aim is to establish the foundations and disciplinary depth required to guarantee them both personal and

intellectual development and employability in line with the demands of the labor market and the welfare society.

The social, scientific and technological changes that have taken place in recent years generate a continuous renewal of employment models and, consequently, require an education that prepares students for jobs that do not yet exist (Fisch and McLeod, 2009). Therefore, the knowledge society demands that new graduates have the following competences:

a. Generic (or general), corresponding to the knowledge and skills common to all professions, enabling people to perform adequately in today's work environments, which are characterized by their complex, competitive and changing nature. The most important ones to develop are the capacity for analysis and synthesis, the capacity to learn, the ability to solve problems, the capacity to apply knowledge, the capacity to adapt to new situations, the concern for quality, the skills to handle information and the capacity to work both autonomously and in groups.
b. Specific, corresponding to those competences that provide the individual with a specific professional qualification, i.e. knowledge specific to a specific professional field. Mastery of these specific competences would provide students with the knowledge, skills, attitudes and values specific to each profession.
c. Cognitive: or thinking skills correspond to consciously goal-oriented processes such as memory, forming concepts, planning what to do and say, imagining situations, reasoning, problem solving, considering opinions, making decisions, making judgements, and generating new perspectives (Moseley et al., 2004).

There is an extensive literature on the competences and skills that can be developed and put into practice with the use of business game (Buil, et al., 2019; Fitó-Bertran et al., 2015; Romero and Turpo-Gebera, 2012). However, simulations are not always useful as pedagogical tools, there being little consensus on the advantages of this method over conventional ones, on what learning outcomes can be achieved through the game, or what factors and variables are decisive for serious game to become an effective learning tool. The success or failure of these depends on several factors, including the realism of the simulation (Yusoff, et al., 2010), ease of use (Hernández-Lara, 2019), usefulness of the system (Tao, et al., 2009) and productive feedback (Mayer and Johson, 2010) among others.

Methodology

In order to carry out the study, a questionnaire was drawn up, based on the generic competences included in the Tuning Project and in the Verification Report of the Official Degree in Finance and Accounting of the University of Valencia, since the target population of the study are the fourth-year students of the Faculty of Economics of the University of

Valencia. All of them have used the same black box or transparent simulators, under the same conditions. The questionnaire is designed to find out what is the perception of the competences and learning process they have acquired thanks to the use of business game (Fitó-Bertran et al., 2014).

The questionnaire is composed of 4 sections. The first section consists of 5 questions focusing on the demographic characteristics of the sample: age, gender, use of and access to technology and previous experience with computer games. The second section includes 7 questions related to the generic competences included in the degree's verification report. The third section of the questionnaire includes 7 questions on the basis of which the specific competences expected to be achieved in the subject will be assessed. And the fourth and last section includes 4 questions on the cognitive skills that can be obtained through the use of business game. For the measurement of the last three sections, a 5-point Likert-type additive scale has been used, with a score of 1 to 5 (where 1 is not at all and 5 is very much).

Results

The sample is made up of 72 students enrolled in the subject, 52% of whom are women and 48% men Regarding the profile and characteristics of the students, 100% were born at the end of the 20th century, all have a computer at home with internet access, 97% access the internet every day, mainly from mobile devices (95%) and generally as a hobby (88%). This confirms the arrival in university classrooms of students who are immersed in digital technology from an early age, presenting the characteristics of the so-called digital natives (Prensky, 2001).

The generic competences analyzed in the study, as shown in Table 1, show that the students perceive these simulations as tools that enable them to improve in these competences. The organization and planning of work (4.04) and the resolution of problems or conflicts that arise between groups (3.91) stand out for their level of agreement among the participants.

Table 1. Results obtained in relation to the generic competences

Items	Mean	Standard Deviation
I improve the way I organize and plan my work	4.04	0.69
I learn to resolve conflicts between groups	3.91	0.79
I practice teamwork	3.87	0.70
I analyse and integrate information	3.73	0.82
I facilitate autonomous learning	3.47	0.85
Improves communication skills	3.46	0.82
I increase my capacity for criticism and self-criticism.	3.22	1.01

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In relation to the specific competences, as can be seen in Table 2, the students perceive that thanks to the business game and the subsequent sharing in class of the strategies, decisions and results obtained with them, they develop an improvement in their capacity for analysis, and in their vision of the business reality as a whole and not as separate parts that are studied in different subjects. The possibility of reflecting on the consequences of the decisions taken (4.57) and the improvement in the capacity for innovation (4.12) stand out, as well as the possibility that most problems have more than one solution.

Therefore, students learn that there is no single answer to a problem, realizing that there is more than one legitimate point of view, encouraging creativity to seek new opportunities and their ability to innovate (4.12) and the search for new opportunities (4.04). In addition, these simulations are effective in the development of essential skills for a manager such as communication, which involves knowing how to listen even if the opinions do not coincide with one's own (3.86), and subsequently making decisions in complex and dynamic situations (Pasin and Giroux, 2011, Romero and Turpo, 2010).

The use of business game in the classroom favors above all reflection and understanding of concepts linked to business management, improving the capacity for analysis and interpretation of business costs, facilitating the interpretation of economic-financial information to make decisions (3,68).

Table 2. Results obtained in relation to specific competences

Items	Mean	Standard Deviation
It allows for reflection on the consequences of decisions taken.	4.57	0.73
Improves innovativeness, as most problems have more than one solution	4.12	0.77
Encourages creativity by looking for opportunities to solve problems I am confident that I can come to a reasonable conclusion.	4.04	0.73
Improves the ability to cope with uncertainty, valuing the importance of information	3.97	0.82
I listen carefully to the opinions of others, even when they disagree with me.	3.86	0.85
Improves adaptability, as it allows me to change my mind when I obtain new information that conflicts with my current opinion.	3.75	1.07
Encourages the processing and analysis of a complete set of global information about a company.	3.68	0.74

This tool enables students to search for, organize, reorganize, transform and creatively use information for different purposes, achieving the development of the subject's cognitive potential. As shown in table 3, students perceive that it improves their understanding of the

concepts studied in theory classes (4.04). This favors the memorization process, since attention is one of the main components of this, and the students have been motivated and concentrated throughout the activity as mentioned above. On the other hand, the depth of long-term learning will depend on the extent to which the students try to analyze, clarify or articulate their experiences, in the simulations they have been able to investigate, reason and make decisions about business problems, allowing the immediate application of theory to practical situations.

Table 3. Cognitive outcomes derived from the use of business game

Items	Mean	Standard Deviation
Facilitates the understanding of the concepts studied	4.04	0.69
Favours the memorisation process	3.91	0.79
Encourages reflection on the consequences of my decisions	3.87	0.70
Encourages the generation of questions during the learning process	3.73	0.82

Conclusions

There is a broad consensus in the literature on the need for change in teaching and learning processes, mainly due to the fact that today's students do not have the same characteristics as the students for whom the education system was designed. And given that the Spanish university is immersed in a process of conceptual and methodological change derived from the process of adaptation to the European Higher Education Area (EHEA), it is the right time to make changes in what is taught and how it is taught.

Therefore, the present research focused on exploring students' perception of their competence improvement, as well as the development of skills and abilities necessary to facilitate their socio-labour integration, by means of business simulations.

The first step is to know and assess the technological competences of the students. The results obtained in the research confirm that students use information and communication technologies on a regular basis. Due to their immersion in this culture from an early age, they have developed new cognitive skills and specific learning styles (Prensky, 2001). Thus, their thinking tends to be fast-paced, simultaneous, random, global and synthetic, rather than successive, linear and deductive (Kirschner, 2017). Their visual skills are superior, they are comfortable with multitasking, they are used to doing several things at the same time (Barak, 2018). They consider it more important to learn through action than through reading or lectures (Thopson, 2013). For them, learning should be more linked to play, fantasy and trial-and-error processes.

For these reasons, the introduction of business simulations in the classroom has been a highly valued experience for the students. Motivating them, from the beginning to the end, thanks to which, they remain concentrated throughout the process, asking themselves multiple questions and in seeking answers to these, they generate and explore different alternatives, promoting active student participation.

The students consider that they have acquired the generic and specific competences analyzed, as by recreating a real situation, with a competitive and unpredictable environment, the students have been able to use different theoretical frameworks to analyze problems and make decisions, fostering teamwork, leadership and creativity, all of which are skills and abilities of an executive.

Therefore, the results obtained allow us to affirm that business simulations are a valid instrument in accordance with the typology of our students, and with society's demand for quality university education, without this meaning that they replace the techniques used until now, but on the contrary, they are complementary, contributing substantially to the improvement of the process, mainly due to their influence on the intermediate variables essential for learning, such as motivation and concentration.

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