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Videogames in the Teaching of Social Sciences

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16.1 Introduction

Videogames can show relevant problems and social issues through the playful development of attractive historical representations for students; establishing five categories related to the teaching and learning of social sciences (Cuenca & Martín, 2010):

- Games of economic nature
- Games of social nature
- Games of geographical nature
- Games of artistic nature
- Games of historical nature

Similarly, continuing with the aforementioned authors, some of the social sciences contents that can be worked with videogames are related to the following:

- War and conflicts
- Urban and territorial management
- Democracy and citizenship
- Economy and trade
- Environment

The technological development is expanding the immersion in playable experiences, in addition to the didactic possibilities of video games with the support of different peripherals and applications. Both Virtual reality



Figure 16.1 Some applications/videogames integrated with VR/AR technologies.

(VR) and augmented reality (AR) are examples of new ways of immersion (Figure 16.1).

In terms of VR, we have devices such as HTC or Oculus Rift, we also have mobile applications. Despite its possibilities and the relative ease of using VR in educational environments, in its most immersive, it requires peripherals to recognize the movement of the body that needs an important economic investment. This technology still to this day is in development and presents a significant room for improvement.

In terms of AR, we have devices such as Microsoft Hololens and numerous mobile applications and videogames integrated with that technology. AR is an emerging technosocial technology that has demonstrated its practical effectiveness in both university and nonuniversity educational contexts (Cabero et al., 2017).

In general terms, given the technological development (AR, VR, three-dimensional (3D) printers, mobile applications, digital platforms, etc.) and the growing interest of students in videogames, numerous educational researchers have highlighted both the advantages of gamification as the responsible inclusion of videogames in educational contexts (Figure 16.1).

This chapter focuses on videogames without didactic objectives useful in learning environments, finishing with a review about the possibilities of game series Civilization and SimCity for the teaching and learning of social sciences, history, geography, and civics.

16.2 Benefits of Gamification and Videogames in Teaching and Learning Environments

In recent years, the use of video games has been shown in different age ranges. In this sense, as shown in the report “The New Faces of Gaming” of the Interactive Software Federation of Europe (ISFE) (2017) through the GameTrack survey (ISFE and Ipsos Connect), a survey that has covered the European markets of the United Kingdom, Germany, France, and Spain, it is confirmed that approximately three quarters of young people between 6 and 24 years old say they have played video games. On the other hand, and continuing with the same report, it should be noted that the popularization of the use of smartphones and tablets has contributed significantly to expanding the age field of players in recent years.

In this sense, in relation to gamification, it:

seeks to stimulate participation and involvement in an activity through the stimulus derived from the challenge linked to obtaining achievements and satisfaction related to the receipt of rewards throughout the game. For this reason, it has been progressively incorporated into the classrooms, trying to stimulate learning. The dynamics will work best when it allows to establish a progression so that each time a challenge is overcome, a new one is proposed. The progression of challenges and the establishment of the constant incentive system constitute two major difficulties for the design of gamified activities in the classroom (2017: 5, translated by Delgado-Algarra).

Some videogames without explicitly educational purposes can be used as a resource for the teaching and learning of social sciences and history in different educational stages. For example:

- Games such as Libertus help us understand the Roman world (Delgado-Algarra, 2018).
- Sagas such as SimCity allow us to work in an integrated management of space and resources (Delgado-Algarra, 2014, 2019).
- Games like This War of Mine allows us to work on raising awareness about issues related to memory (Delgado-Algarra, 2014).

Definitely, gamification responds to a process of implementation of playful procedures in educational environments (Ayén, 2017) and advantages of using video games in teaching have been reflected in classroom experiences (Lorca Marín & Vázquez-Bernal, 2012).

In a broad sense, games have levels of benefits for learning as a main reference for the didactic review of videogames in block 3 as listed hereunder (Martínez-Navarro, 2017):

- Support to the internalization process of multidisciplinary knowledge. For didactic review of videogames about: [knowledge].
- Understanding of ways of thinking different from those of our environment. For didactic review of videogames: [positioning].
- Improvement of the abilities to solve problems. For didactic review of videogames: [resolution].
- Improvement of strategic planning. For didactic review of videogames: [planning].
- Encourages decision-making. For didactic review of videogames: [decision].
- Develops social skills, experience with various identities and experiences. For didactic review of videogames: [social].
- Improves attention and concentration. For didactic review of videogames: [attention].
- Increases motivation. For didactic review of videogames: [motivation].
- Improves critical thinking. For didactic review of videogames: [reflection].

16.3 Videogames as Didactic Resources for the Teaching of Social Sciences

Regarding the introduction of video games in the classroom as a teaching resource, some general strategies are the following (Heick, 2018) (Figure 16.2):

- Play at school: The selection of the game, preferably, is decided between the teacher and the students, justifying the reason for the choice.
- Students play at home: rejecting the use of video games involves a total disconnection with the environment of students who, for the most part, are accustomed to the use of games or the consumption of mobile applications.
- See them playing: related to the previous proposal, since not all students have access to video games outside the classroom or do not have adapted equipment, the possibility can be raised that the recorded gameplay will be edited and uploaded to Youtube by adapting privacy.

- Analyze: there is the possibility of looking for information about the games, their developers, their development, or their tendencies; being able to analyze video reviews, text, post on social networks, related art, or movements linked to games.
- Reimagine: as a novel, comic, short, etc., what would change the game, justify the reason for the changes, evaluate the impact of those changes, and how they would benefit the learning of concrete contents of social sciences, geography, history, and civics.
- Plan: plan videogames requires considerable effort and time, in this case, the integrated approach with other areas would be advisable.
- Create: there is the possibility that students create their games, with programs such as Scratch, or that they can create their environments and games, with, e.g., Minecraft edu.
- Facing relevant social problems are treated in some videogames and may have a positive impact on the development of social and citizen commitment and the enrichment of critical consciousness. Such problems include the following:
 - civil consequences of war (This War of Mine),
 - resource management (SimCity Edu),
 - understanding the motivations that determine the decision-making in political-military strategies (Nobunaga Ambition, Age of Empires, Civilization, etc.), etc.

We are going to review the didactic possibilities of two sagas of great trajectory in the world of videogames:

- Sid Meier's Civilization/Civilization: began its journey in the market in 1991, and since then, on the market, there are a total of six historical titles and one about the future. Civilization is a turn-based strategy game in which we manage an empire, choosing from a wide variety: Spanish, Japanese, Romans, Carthaginians, Egyptians, Indians, Incas, Greeks, Japanese, Koreans, Chinese, Mongols, Ottomans, Persians, Russians, Sioux Indians, Zulus, Vikings, Portuguese, Sumerians ... among many others. Each empire has a real leader and aims to be the leading civilization in the world.
- SimCity: SimCity is a city management simulator that became very popular in the 1990s that gives us control over different variables for the design and management of the city, always adapting to the budget and taking into account the action of possible natural disasters. In general,

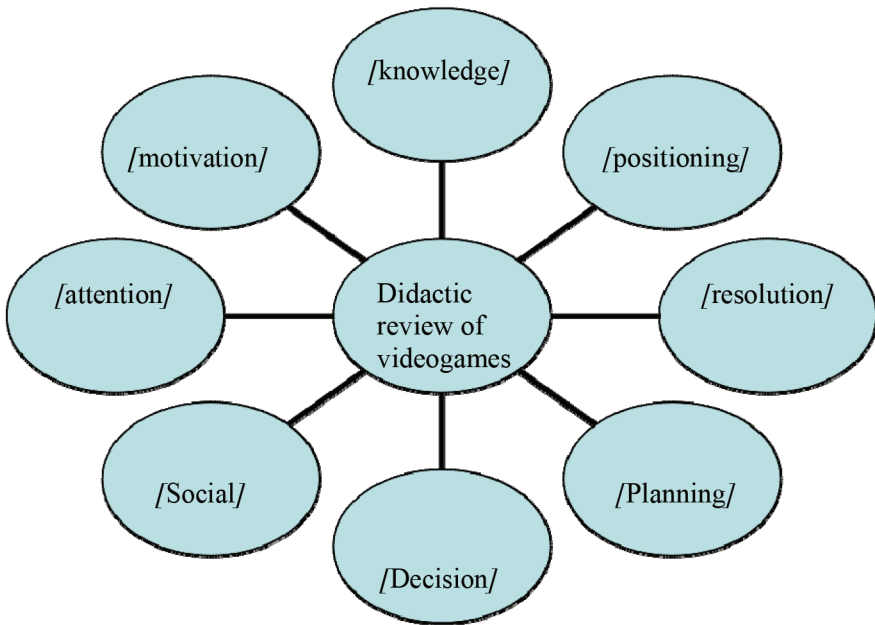


Figure 16.2 General categories for didactic review of videogames.

SimCity allows the user, depending on their level of deepening in the game, to get involved in their experience with different levels of difficulty.

These games involve simulations, decision-making, management, resource management, and artificial intelligence, a strategy where comprehension, planning, execution, and revision processes come into play. From this point, start the didactic review of videogames, where we will discuss the following categories and questions (Figure 16.2):

- [Knowledge] Are there useful concepts for social science learning? Which are?
- [Positioning] Faced with certain events in the game, can we adopt a positioning? Does our positioning influence the playable experience? Can we understand the thinking of others?
- [Resolution] Are presented relevant socioenvironmental problems
- Are competencies set in motion to solve problems?
- [Planning] Are there planning phases for the action? Does it allow us to evaluate advantages and disadvantages before putting it into practice?

- [Decision] Is decision-making encouraged? On what decisions are made? What are the difficulties in decision-making?
- [Social] What is the role of social and civic competence? Are issues related to identity raised? How are the social events that can be experienced in video games?
- [Attention] Must we focus our attention? What must we focus on?
- [Motivation] What is the motivation to continue playing? How can this motivation improve social sciences learning?

Didactic review of videogames about [Knowledge]

Civilization raises the development of real civilizations and real events with relevant historical figures. It includes issues that allows to work the historical time from a holistic perspective such as (Figure 16.3):

- Technological research.
- Influence of religion
- Political relations
- Diplomatic relations
- Military relations
- Economic relations

As for SimCity, the management of the economic and urban heritage requires a process of economic optimization with multiple variables, among others:

- Expenditures for the execution and maintenance of infrastructures and services
- Income from taxes (with decision-making associated with the rise or fall of them)
- Tolls and use of services
- Sale of hydroelectric resources

Likewise, it requires management of the amount of population; soil value; and mortgage loans with interest; management of the territory and spaces creating residential, commercial, and industrial areas.

16.3.1 Positioning

Both Civilization and SimCity allow to understand different motivations and different points of view, being able to serve as a starting point to raise debates about relevant socioenvironmental problems in the classroom.

The player must be involved in the game experience and must understand the variables involved in historical events, in the case of Civilization, and



Figure 16.3 Diplomacy and alliances in Civilization VI (2016).

in the management of the city that is created, in the case of SimCity, at the same time that explores and identifies the relationships between them (Figure 16.4).

16.3.2 Resolution

In both cases, the player is exposed to problems that, in many cases, are a consequence of their decision-making. The student must make responsible use of the tools and means at his/her disposal in the game to solve the problems that arise.

The use of this videogame in the classroom allows to contextualize and apply in the virtual practice the knowledge acquired by the students previously, including:

- Development of attitudes of critical thinking
- Development of attitudes of problem solving

Regarding SimCity, with the first roads and buildings, problems will begin. We will have little money and we will have to cover the essential needs for the city. Covered some essential needs for the city to work, there are many tasks to be done, such as providing basic services such as health, safety, education, or firefighters (Figure 16.4).



Figure 16.4 Example of city focus on culture in SimCity (2013).

16.3.3 Planning

Closely related to the above, in both cases, attending to the problems requires prior planning, evaluating pros and cons of our decisions, and assuming the consequences.

Regarding SimCity, while getting involved in the gaming experience, the player must understand the number of variables involved in the management of the city he/she is creating, while exploring and identifying the relationships between them (examples: soil quality, public services, cost of maintenance of services, and amount collected).

16.3.4 Decision

In Civilization VI, decisions are made in multiple sections, being especially relevant those related to (Figure 16.5):

- Technological research
- Influence of religion
- Political relations
- Diplomatic relations
- Military relations



Figure 16.5 Research and technology decisions in Civilization VI (2016).

- Economic relations
- Many other variables

In relation to SimCity, as the player's degree of understanding about all the variables and their interrelations grows, this one goes from making decisions without a defined orientation to planning the next steps to take at two levels:

- Microlevel (e.g., organization of new small areas or services)
- Macrolevel (e.g., change of type of energy source, optimization of the city's water supply system)

For which it must establish a strategy of organization of expenses and planning of the cost of maintenance of the facilities in front of the obtained collections. Space is very limited so as to cover the deficit in something—safety, health, energy, tourism, etc.—we must obtain it from neighboring cities.

16.3.5 Social

In both cases, situations arise in which the social relations and the decisions taken in this regard have a decisive influence, either in the historical development, in the first case, either in the city development, in the second.

The social and civic competence is very important in Civilization and SimCity, but Civilization also includes historical environments. On the other hand, SimCity allows the user, delving into the game, to get involved in their experience with different levels of difficulty, where space is limited and services must be negotiated with other cities that offer resources that we lack.

16.3.6 Attention

Connected with the overcoming of the problems that arise and the observation of the results obtained as better decisions are made.

In the execution phase, in Civilization and SimCity, the player triangulates the possibility of implementing his/her decisions and experiences the possible unforeseen consequences of his/her decisions.

Regarding SimCity, there are six major specializations in which it is convenient to focus on advanced parties:

- Culture, creating great monuments, sports stadiums or exhibition centers, which attract many tourists
- Mining, extracting coal and minerals, which we can consume and sell to other cities
- Drilling to extract oil
- Games, to build casinos that attract many tourists, but also delinquency
- Electronics, to be a neuralgic center of high technology and development of processors, computers and televisions to later export them
- Trade, to import, export, and store resources

For example, if you decide to build an electronic city, it is necessary to prioritize education and create a nearby university community as soon as possible (Figure 16.6).

16.3.7 Motivation

In both cases, the integration of different variables and decision-making generate consequences that can be analyzed within the classroom, either through classroom play or through the recording and observation of games. The fact of being able to see the evolution of the respective civilizations or of the city, respectively, facilitates the meaningful analysis of the causality and a deeper understanding of the role of the different variables proposed in the game to extrapolate them to the reality in view of the teaching and learning of history and social sciences.



Figure 16.6 Creation of a university community in SimCity (2013).

16.4 Conclusion

Although gamification is not a new concept, we consider that the technological development and the recognition of its educational possibilities have extended the possibilities in a new way, contributing significantly to education, in general, and to the teaching and learning of social sciences, in particular. The development of technologies and the expansion of the use of tablets and mobiles in the daily context of students should be considered in education.

It could be considered that addressing this reality of the student, beyond encouraging motivation and contributing to the understanding of social sciences contents, serves as guidance for responsible and critical use of them, taking advantage of their educational possibilities.

In addition, the succession of challenges to overcome that arise in videogames seeks to enhance participation and involvement in the proposed tasks, aspects that we consider especially relevant for the teaching of social sciences, geography, and history, areas where a commitment to relevant socioenvironmental issues is required.

According to the reviews of the series *Civilization* and *SimCity*, great possibilities are observed for the teaching and learning of history, geography, and social sciences, attending to concrete contents of the area, to the resolution of problems, planning, decision-making, development of social skills, attention, motivation, and reflection.