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Commercial video games for teaching Social Sciences in Primary Education. A comparative analysis of four historical sagas

Videojuegos comerciales para la enseñanza de Ciencias Sociales en Educación Primaria. Análisis comparativo de cuatro sagas históricas

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Abstract: Video games have been used in education for several decades. However, their use in classrooms is still limited to the inclusion of online games created for educational purposes. The video game industry is one of the most powerful in the entertainment business, and much is invested in the search for increasingly accurate recreations, thanks to the work of documentary filmmakers. The aim of this work is to evaluate the potential of certain commercial video games of a historical nature for their possible application in the teaching of Social Sciences in Primary Education. In order to carry out this analysis, a report was drawn up on four sagas, according to their link with the educational curriculum, the conditions of playability and accessibility, and a discourse of advantages and disadvantages. These reports were then qualitatively analysed using ATLAS.ti software. Among the results, it is worth highlighting the potential of these video games for teaching concepts related to Geography and History, and their impact on the motivational level. However, some disadvantages are highlighted when integrating these games into the classroom. In the discussion, the results are contrasted with similar studies on other types of video games in terms of their didactic and motivational potential. In short, video games can be an attractive educational resource when used appropriately.

Keywords: Social Sciences; History Education; Video games; Comparative Analysis; Educational Innovation; Game-Based Learning.

Resumen: Los videojuegos se han utilizado en educación desde hace varias décadas, sin embargo, su uso en las aulas todavía se limita a la inclusión de juegos online creados con fines didácticos. Pero la industria de los videojuegos es una de las más potentes dentro del negocio del entretenimiento y se invierte mucho en la búsqueda de recreaciones cada vez más precisas, gracias al trabajo de los documentalistas. El objetivo de este trabajo es evaluar el potencial de determinados videojuegos comerciales de carácter histórico para su posible aplicación en la enseñanza de las Ciencias Sociales en Educación Primaria. MÉTODO. Para realizar este análisis se ha elaborado un informe sobre cuatro sagas, según su vinculación con el currículo educativo, las condiciones de jugabilidad y accesibilidad, y un discurso de ventajas e inconvenientes. Posteriormente, estos informes se han analizado cualitativamente mediante el software ATLAS.ti. Entre los resultados, cabe destacar el potencial de estos videojuegos para la enseñanza de conceptos relacionados con la Geografía y la Historia, y su incidencia en el plano motivacional. No obstante, se ponen de manifiesto algunas desventajas a la hora de integrar estos juegos en el aula. En la discusión se contrastan los resultados con estudios similares sobre otro tipo de videojuegos en cuanto a sus posibilidades didácticas y motivacionales. En definitiva, los videojuegos pueden ser un recurso educativo atractivo cuando se utilizan adecuadamente.

Palabras-clave: Ciencias Sociales; Educación Histórica; Videojuegos; Análisis Comparativo; Innovación Educativa; Aprendizaje Basado en Juegos.

1. Introduction

Video games have grown in popularity over the last 50 years. They are now a popular form of entertainment for children, teenagers and adults worldwide (Rodríguez Domenech & Gutiérrez Ruiz, 2016). The industry has grown substantially, generating greater economic returns than the film and music industries combined. This has led to a significant investment in research, development and innovation (R&D&I) in this sector, resulting in a large quantity and diversity of content, and the high quality of its design. Consequently, in a relatively short period, video games have evolved from simple arcade games limited to specific electronic devices to highly complex, sophisticated and accessible content that can be played on diverse devices by diverse audiences.

The term 'serious games' has been used since the 1970s in educational settings (Abt, 1970) to describe video games primarily designed and used for pedagogical purposes (Laamarti et al., 2014). Despite this, using this type of tool in the classroom was still considered an innovative methodology, which suggests their impact on the teaching-learning process remains limited (Girard et al., 2013; Martínez et al., 2022). However, the new curricula, adapted to European guidelines, advocate the development of skills that enable citizens to respond to the challenges of the twenty-first century (Salamanca & Badilla, 2023), while ensuring effective social and professional integration (Sierra Daza et al., 2023). In this context, technologies, including video games, play an important role and have started to be implemented in the classroom at all educational levels, especially in secondary and higher education (Campillo & Casado, 2022), where they are becoming increasingly relevant. Using video games is an effective educational tool that contributes to maintaining students' motivation and interest, and adapting learning to individual needs (Costaguta et al., 2023). As a result, there has been a significant increase in the scientific literature on the subject over the past five years, both nationally and internationally (Vieira et al., 2019; Martínez et al., 2022; Sierra et al., 2023; Cole et al., 2024).

This research focuses on the beneficial effects of video games in primary education, highlighting their potential to develop cognitive skills and specific competencies, including social skills, in concordance with other Latin American authors who analyse the use of video games to teach historical concepts from their respective educational curricula at different stages (Evaristo-Chiyong et al., 2016; León-Atiencia et al., 2020). This is framed within the benefits that the last century's pedagogical theories have attributed to games, and therefore to the active methodology of Game-Based Learning, in education. Among these benefits, it is worth noting that playing games contributes to the development of intellectual capacity and other values such as affectivity, sociability and motor skills (Fernández-Cárcar, 2022). In addition, video games are excellent motivational tools to facilitate concentration, critical and logical thinking, and problem-solving (Soto-Ardila et al., 2019). However, the benefits do not lie only in the possibility of playing them, creating video games in the classroom is becoming an increasingly important element in school curricula for the promotion of 21st-century skills, namely learning, innovation, digital literacy, and abilities for life and work (Almazroa & Alotaibi, 2023), based on the pedagogical methodology of learning by doing (Bano et al., 2024).

Numerous and varied online games for educational purposes are currently available on websites. Additionally, there are many applications for creating video

games, such as Scratch (Taufiq et al., 2024) or Game Maker (Acosta et al., 2020), which offer countless possibilities. Alternatively, it is possible to have recourse to commercial games, not specifically designed for didactic purposes but for recreational ones, which can be of great interest in the teaching-learning process of any subject (Camuñas-García et al., 2024).

Despite the existence of previous initiatives in the field of social science teaching (among others, Cuenca (1999, 2001) and Grup 9 (1998) within the Spanish context), Kurt D. Squire's doctoral thesis, entitled '*Replaying History: Learning World History Through Playing Civilization III*, represents a decisive contribution to the use of commercial video games for teaching history (Fernández-Cárcar, 2022). Following this work, other researchers and teachers have been incorporating them into their classes and evaluating their pedagogical effectiveness, especially in secondary and higher education (Campillo & Casado, 2022; Cuenca & Martín, 2010; Spring, 2015; Chapman, 2016; Delgado-Algarra, 2018; Figueiredo, 2020). In this regard, it is worth highlighting the novel approach adopted by McCall (2022), who focuses on developing historical thinking skills by providing specific examples of how video games can be effectively used to teach critical thinking and historical analysis. However, the use of video games to teach history or cultural heritage can still be considered a relatively incipient field (Cerezo-Pizarro et al., 2023).

Camuñas-García et al. (2024) state that introducing video games makes learning history and heritage an attractive activity that produces significant learning, particularly for the youngest, as they are digital natives. This occurs, along the lines already pointed out by Prensky (2007), thanks to the interactivity that allows students to experience «historical immersion» in ancient eras, explore past scenarios and interact with them. Moreover, video games can be useful for increasing students' motivation and engagement with learning history, encouraging decision-making, and reflecting on their choices' potential consequences. Likewise, deciphering and evaluating the data presented in the game also helps students develop analysis and synthesis skills and reinforces critical thinking (Van Eck, 2006). Like any game, video games also help develop cognitive, social, and emotional competencies (Zioga et al., 2024). For the integration of video games in the Social Science classroom to be truly meaningful, the role of teachers is fundamental. Teachers must possess in-depth knowledge of video games, enabling them to precisely define the educational objectives, determine the difficulty level and solve any technical problems that may arise during the sessions. The teacher must also design learning strategies that complement the gameplay and activities that reinforce the symbolic connection between the video game and the content to be learnt since the mere fact of playing does not necessarily result in structured learning (Fernández-Cárcar, 2022).

However, some potential drawbacks must be taken into account when integrating video games into the classroom, particularly in the primary education context (Venegas, 2019). On the one hand, there is a need for adequate infrastructure and economic availability thereof. On the other hand, concerns have been raised regarding the degree of violence that some games develop or the addiction problems they generate (Esposito, 2020). Furthermore, the licences granted to developers to enhance the appeal of the game often result in historical inaccuracies and anachronisms (Campillo & Casado, 2022). Although there have been previous studies that explored the relevance and applicability of commercial video games in the classroom, either they have primarily focused on secondary and higher education (e.g.

Jiménez-Palacios & Cuenca, 2021) or not specifically addressed the first stage of education, thereby ignoring the differential characteristics of students at this age (Camuñas-García et al., 2024). Consequently, it is crucial to undertake the analysis proposed in this paper to ascertain the potential of different commercial video games and address any possible shortcomings that may hinder their transformation from a mere recreational tool into a pedagogical resource within primary education classrooms.

The central aim of this study is to assess the potential of video games as a pedagogical tool for teaching history in primary education. From this principal objective, several secondary objectives then emerge, which are as follows:

OS1. To evaluate the learning possibilities offered by the selected video games in Social Sciences, specifically focused on teaching geography and history.

OS2. To analyse the possibilities offered by commercial sagas for their didactic use.

OS3. To assess the didactic, technical and economic advantages and disadvantages of the video games selected.

To achieve this goal, the paper is structured as follows. The following section presents the methodology, especially emphasising the 4 saga-specific analyses, and the coding used. The results are then described, followed by a discussion of the data from similar studies. The article concludes with brief suggestions for future work.

2. Method

An exploratory analysis has been performed to investigate this topic (Mavrou, 2015; Soto Rojas, 2022). Firstly, each video game was rigorously examined and analysed to determine its characteristics and evaluate its capacity to provide a didactic service in alignment with the objectives of this research. Subsequently, a comprehensive report was prepared for each video game based on a previously established script, following the completion of the experimentation process. This report analyses the fundamental parameters of the research, namely the connection with knowledge and skills related to the social sciences according to current educational legislation, conditions of playability and accessibility to video games, and the advantages and disadvantages. The reports were used as a source for the qualitative analysis carried out with the ATLAS.ti software, depending on the categorisation detailed below.

The video games analysed comprise the Civilization, Europa Universalis, Age of Empires, and Assassin's Creed sagas. The selection criteria were as follows:

- The game is set in contexts related to different historical periods.
- The game can be adapted to suit the teaching and learning process.
- The game meets the technical requirements for use in an educational setting.
- The game is supported by a consistent previous bibliography on its didactic use.

The experts responsible for analysing video games, both empirically and statistically, possess four fundamental characteristics that enable them to fulfil this function:

- Extensive knowledge of video games and their features.
- Training in teaching social sciences, in general, and history, in particular.
- Teaching experience in the knowledge area and in the stage for which the use of video games is to be applied.
- Experience in statistical analysis within the field of social sciences.

2.1. Summary of the selected video game sagas

Civilization

Civilization is a renowned series of turn-based strategy video games set in different historical periods, with seven episodes thus far. Civilization VI initially presents 18 civilisations, each led by a historical figure, including Pericles (Greece), Cleopatra (Egypt), Trajan (Rome), John III (Portugal), or Simón Bolívar (Colombia), among others.

Every civilisation has distinctive characteristics, units, and buildings designed to reflect its historical reality. To illustrate, the Spanish civilisation, led by Philip II, is distinguished by the "Treasure Fleet", which enables the rapid creation of an armed fleet compared to other civilisations. Furthermore, bonuses are awarded for maritime trade relations. Spain also possesses a distinctive combat unit, the "Conquistador", which augments its combat capabilities when situated next to a religious unit. This allows it to impose its religion by conquering a city. Spain can also construct a special edifice, designated as “The Mission”, which increases the resources required to build new structures, create combat units and so on. Leaders also have unique traits. For instance, Philip II has a special ability, "El Escorial", which allows units called "Inquisitors" to use their ability to "eliminate heretics" with greater frequency than their counterparts in other civilisations, thus allowing any effort to impose an alternative religion on cities within Spanish territory to be more effectively countered.

The game commences in 4000 BC and progresses over 500 turns until 2050, regardless of the civilisation selected. During this period, players will progress through the different historical periods, transitioning from one to another upon the occurrence of a specific scientific discovery or the establishment of a particular political principle. However, these events do not necessarily need to align with the actual chronology of their occurrence. Players may initiate the game at any location within a randomly generated map or create a map. They are provided with a settler who enables the establishment of a capital city and a beater, who facilitates exploration of the surrounding region. Players can also build a city anywhere, but the game suggests different locations based on proximity to the sea, the presence of a river or the possibility of finding resources. The decision regarding the location of the capital is crucial since faster access to resources to build "wonders" depends on it, which grants different bonuses.

There are several ways to win the game: victory by domination, whereby the player conquers all possible territories and subdues other civilisations; scientific victory, obtained by launching colonization modules on Mars; cultural victory, by creating

museums, housing works of art, and attracting tourists; or religious victory, by imposing the religion of the chosen civilisation in most territories.

Additionally, Civilization VI incorporates an encyclopaedic reference tool, the Civilopedia, which provides comprehensive information about the game, its historical context, characters and civilisations, architectural and special units unique to each civilisation and details about the terrain and geographical features, as well as the governments and political principles of the civilisations.

As Delgado-Algarra (2018) points out, this video game would not only serve to study history per se, but also various content related to conflicts, land management, democracy and citizenship, and the economy.

Europa Universalis

The Europa Universalis saga was first released for personal computers in 2000, based on the board game of the same name. The series contains four instalments of real-time strategy video games, and its temporal scope encompasses the period between the fifteenth and nineteenth centuries, spanning the decline of the Byzantine Empire and the conclusion of the Hundred Years' War to the end of the Napoleonic Wars.

The objective is to assume control of a nation and extend its influence across all known territories, as the game's map covers the entire globe. These games offer players a wide range of decision-making, allowing them to alter the narrative course and create an entirely alternative world based on the choices made in response to specific events. Furthermore, the games are comprehensive in their historical documentation, even exceeding the standards of some textbooks. However, this level of detail also makes them much more complex to play.

The main difference between each new iteration of the series is the incorporation of new graphics and elements. Therefore, Europa Universalis IV is examined in this study, as it includes the elements present in the previous versions and incorporates new content. At the beginning of the game, players can select the desired starting year, which ranges from 1444 to 1821. The eligible nations are modified according to the chosen year. Moreover, the video game can suggest specific historical events as potential scenarios, such as 1492 (The New World) or 1701 (The War of the Spanish Succession). In 1444, the player can select from a range of prominent European powers or various African and Asian peoples and American tribes that existed contemporaneously.

A long list of expansions is also available, including new civilisations, historical events, political and management options for the nation, army units, and so forth, making each game unique and distinct. One of these expansions, entitled "Women in History", was released for free in 2015 and was so well received that it is now a standard game feature. It includes characters such as Isabella the Catholic, Marie Antoinette, and Catherine de Medici, along with over 100 events related to these women, making up for the lack of female representation in the first instalments. With the release of the fourth game a user guide was made available to teachers (McCall, 2024). This latest instalment has been the subject of research to ascertain its educational potential for teaching historical, geographical and economic concepts (Mugueta, 2019) in

comparison with academic curricula (García Lafuente, 2017) and to boost student motivation (Rodríguez-Ponga, 2021).

Age of Empires

The Age of Empires saga is a highly regarded and popular title in the video game industry and has been one of the sagas that has also aroused the most interest among teachers to understand complex temporal aspects and the everyday life of historical societies in history classes (Cuenca, 1999; Mugueta et al., 2015, Rodríguez-Hernández et al., 2018). The series comprises four main entries of historical content and one based on mythology. These are real-time strategy games in which players assume the role of a historical civilisation leader. Each instalment covers a specific historical period. The first entry is set in Antiquity, the second in the Middle and Modern Ages, and the last two in the Modern Age. In addition, each video game has a distinctive set of civilisations to be chosen, although some appear in more than one entry.

In this saga, players must improve their village by learning new technologies to enhance gathering or researching weapons, train military units to defend, attack, and gain resources from rivals, and evolve to the next age or era, unlocking new technologies, buildings, military units, and so on. While the progression through the eras differs in each instalment, the sequence of events remains consistent.

Progression usually requires fulfilling certain conditions: gathering sufficient resources, building determined structures, or achieving certain goals. Once these have been met, the option to advance to the next age can be selected from the main building in the capital. In Age of Empires IV, for example, progression needs the accumulation of resources to construct a building, unique to each civilisation. Once built, a new Age automatically begins, giving players access to upgrades and new items.

Each video game has a variety of game modes. In single-player mode, the "Main Campaign" is an attractive option since players can revisit historical events and battles, assuming the role of a protagonist and undertaking missions within a specific period. Another noteworthy aspect of this mode is the audiovisual content between missions, which includes cinematic sequences that tell the story that precedes and follows each main event while providing access to additional material related to the historical context.

An innovative feature with great potential is the option to customise games. In this mode, players can create a game from scratch, customising the map in multiple ways and even selecting the time of year to play. Players can also choose their preferred civilisation and opponents, or the frequency and variety of resources, thus modifying the difficulty level of the game. It is also possible to form teams, allowing players to collaborate with other civilisations to achieve the final objective, which can also be customised either from the options provided or by selecting a free game, i.e. without a defined goal.

Assassin's Creed

This historical fiction video game saga was first released in 2007. There are 13 main instalments up to date, as well as secondary games, novels and film adaptations. While

every video game has its own story, the general plot of the saga evolves with each new entry. This means the common thread may be lost if players do not play one game. The video game narrative is structured around two lines of time: the present and the past. In the present line, the protagonist is a member of the almost-extinct Brotherhood of Assassins, also known as the Hassassins. After leaving the Brotherhood, the protagonist is kidnapped by the Templars, their main rivals, to relive the memories and lives of their ancestors through the Animus Machine, an advanced technology that allows the retrieval of objects from the past. It could grant the Templars the power to conquer the world and alter the course of humanity's destiny.

The second timeline, set in the past, is of particular interest as it features high-quality recreations of historical locations and events presented with great fidelity despite being adapted to fit within the fictional narrative. Although experts evaluate the narratives, every entry states that some elements may have been slightly altered to suit the saga's storyline. In Assassin's Creed III based on the American War of Independence, for instance, the protagonist, a mixed-race Native American, instigates the Tea Party by assaulting a ship at the Boston dock and casting its cargo into the sea.

Since the eighth instalment, set during the French Revolution, players can freely explore the entire map, visiting monuments and observing the daily lives of non-player characters (NPCs) from that time and place. The last three video games introduced the "discovery mode", which allows players to revisit historical periods from a first-person perspective. This would be a journey into the civilisations of Ancient Egypt, Ancient Greece and the Viking Age. In the first two eras, the game allows players to visit them at their leisure, stopping at various points and receiving commentary from a narrator or guide as the camera focuses on the area in discussion.

The game then displays actual photographs of the area, relevant paintings or sculptures from each epoch and the museum or location where they can be seen. It also includes maps or diagrams showing how the city might have looked at the time. All of this has enormous educational potential, as demonstrated in Quintero Mora (2018), who analyses a prospective educational proposal for teaching the heritage and culture of Ancient Egypt using this material.

2.2. Procedure

Once the comprehensive reports on the selected video games were obtained, a qualitative analysis was conducted (Campo País, 2014; Huber, 2018). For this purpose, the reports were imported into the software ATLAS.ti as textual sources. To achieve the research objectives, a network of conceptual cores was designed to facilitate the analysis. This network has three principal cores: Learning (OS1), Use of the tool in the classroom (OS2), and Advantages and disadvantages of various types (OS3). These content cores were further subdivided into sub-cores, thus enabling an in-depth examination of the data from the sources concerning the potential and limitations of the didactic use of video games (Figure 1).

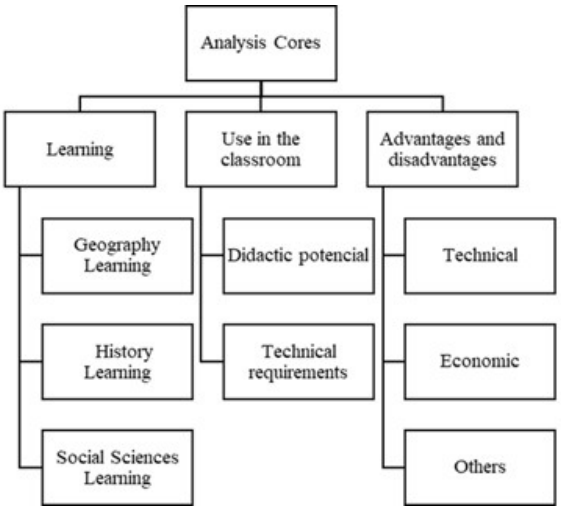

Figure 1. Network of categorisation cores in ATLAS.ti.

3. Results

Regarding OS1, the analysis suggests that the video games under examination constitute valuable educational resources to teach social sciences and history. Analysing the texts in terms of the first of the categorisation cores and its corresponding sub-cores reveals a frequency of 39 mentions of issues related to social science learning. Table 1 shows the distribution of this frequency.

Table 1. Results of frequency of occurrence of conceptual cores associated with OS1.

	Civilization	Europa Universalis	Age of Empires	Assassin's Creed
Social Sciences learning	4	2	1	1
History learning	4	3	3	3
Geography learning	-	1	2	-
Open code (motivation, use of characters, historical empathy, historical thinking)	7	1	4	3

Considering these findings, it can be argued that the video games analysed provide an appropriate setting for acquiring competencies related to the social sciences. The link with history education is particularly notable, with 13 mentions in total. In this sense, Civilization is the most suitable, according to the reports analysed, followed by Age of Empires. Furthermore, the possibility of introducing interesting nuances for teaching history, such as the development of historical empathy or the use of characters as a means of learning, has been identified.

The following examples serve to illustrate this categorisation:

- History learning: "The teacher can also motivate students to learn about the civilisation or historical period represented by the game before playing it by doing historical research about it" (Age of Empires).

- Geography learning: "They can also learn about geography and geopolitics during the game with the comprehensive interactive world map within the year they are in. Students can explore various regions' geography, borders, trade routes, and natural resources. They can learn about geopolitical ideas and how a country's economic and political policies can be influenced by its location" (Civilization).

- Developing historical thinking (Open Code): "Using the multiplayer mode, they can work on cooperation between civilisations or create debates between opposing civilisations. In teams representing different civilisations, students can discuss options and make decisions based on their understanding of the past. In this way, the ability to communicate, think critically and solve problems can be developed" (Europa Universalis).

In OS2, the use of these games in educational contexts was explored. The results of the sources categorisation indicate the potential for didactic use of all of them, with some remarkable nuances (Table 2).

Table 2. Results of frequency of occurrence of conceptual cores associated with OS2.

	Civilization	Europa Universalis	Age of Empires	Assassin's Creed
Didactic potential	1	1	2	4
Didactic challenges	2	2	1	1
Open code (motivation, conflict resolution, interactive learning)	2	1	1	2

Once again, it is confirmed that all games have potential for pedagogical application, enabling educators to teach in a way that is engaging and stimulating for learners, thus promoting greater motivation. The following coding examples help to illustrate their potential didactic applications.

- Didactic potential: "It presents historical scenarios that recreate important battles and historical events that can be used in the classroom. These scenarios can be used as a starting point to discuss and analyse historical events. Students can further investigate historical contexts, examine military and political strategies, and consider how their choices affect history" (Age of Empires). "As a turn-based strategy game, the first thing that can be used in the classroom is decision-making to manage resources, build new buildings, explore, etc., and conflict resolution when a civilisation wants to declare war, a city has supply problems, trade agreements with other cities, etc." (Civilization).

- Didactic challenges: "Players can explore the different game options and consider how these options might have changed the actual course of history, working out causality and decision making." (Europa Universalis).

– Interactive learning (Open code): "The story can also be learned interactively by playing this kind of video game because it allows making decisions and acting as the story protagonist." (Civilization).

OS3 seeks to identify the advantages and disadvantages of using these video games in the classroom (Table 3).

Table 3. Results of frequency of the advantages and disadvantages associated with OS3.

	Civilization	Europa Universalis	Age of Empires	Assassin's Creed
Advantages	4	3	5	5
Disadvantages	4	1	1	4

This analysis shows that all games have both advantages and disadvantages. Among the advantages, those related to the game mechanisms are particularly noteworthy. The disadvantages, especially those related to technical feasibility and economic costs, would partially limit, but not prevent, the use of these games as pedagogical resources.

Fragments of the sources below exemplify the coding carried out:

– Advantage of the type of game: "A strength of the game is that players can choose a nation's military, diplomatic and political course of action. This allows students to examine significant historical choices and their consequences" (Europa Universalis).

– Technical advantage: "As for access to this video game, it is only available on PC, with fairly low requirements, so there should be no problem running it on any computer" (Europa Universalis).

– Economic disadvantage: "This videogame has a market value of 60€, and one copy per device would be required, regardless of whether a group or individual activity is carried out on each computer" (Civilization).

Table 4 summarises the frequency of fragments categorised according to the conceptual cores established for the research, classified for each video game.

Table 4. Results of frequency of the advantages and disadvantages associated with OS3.

	Key element	Advantage	Disadvantages
Civilization	Historical thinking Historical immersion Simplified representation Interaction with the story	It shows how civilisations have changed over time. You can learn about history in a simple way and find out more by using the Civilopedia. You can interact with historical characters and buildings.	The lack of real chronology and simplified evolution can confuse students when working with chronological time. Extra paid content is required to access certain events. Not all details of historical events are explored, which can lead to limited understanding.
Europa Universalis	Cultural Representation Geography and Politics Use of Diplomacy Historical Decision-Making Playability	Students observe how culture influences the formation and development of countries. Frontiers, trade routes, natural resources and the known geography of the world are explored. The importance of national and international relations is learned. Problem-solving is encouraged, with the advantage of even being able to change history.	It requires additional research and complementation with other resources. The main disadvantage lies in the difficulty and complexity of the game mechanics to carry out any action.
Age of Empires	Customizations of games Historical research Presence of civilisations Historical geography Cooperation and debates	Creativity and imagination are encouraged. Knowledge about different times and events is acquired. Learn about the history of ancient and modern civilisations and how they have developed over the years. Learn about how geography affects the development of civilisations.	It can generate confusion among students. In-game information is basic or limited. Not all deliveries offer the same civilizations. Map representations are not realistic. Students may have difficulty with game mechanics.
Assassin's Creed	Ambience Historical immersion Recreation Cultural knowledge Graphic realism	Detailed historical eras and places can be explored. Along with exploring places, students are immersed in specific eras and events. Recreations of places and monuments from each period are shown. Learn about the lives of different cultures of the periods each game is set in. The images and graphics are quite realistic.	The representation may be simple. The game's own plot may distort the story as it unfolds. Recreations may be inaccurate The representations may be biased or incomplete. Scenes with explicit violence may be encountered. An advanced device is required.

4. Discussion and Conclusions

The qualitative analysis performed in this study enables us to reach a series of significant conclusions regarding the potential of the selected video games to facilitate the development of teaching and learning processes related to social sciences in the context of primary education, which was this research's main objective. About OS1, a significant number of textual sources were identified in which the potential for using these video games in the field of social sciences is discussed, following the findings reported by Cuenca & Martín (2010), Spring (2015), and Fernández-Cárcar (2022). In most cases, the potential for teaching history is evident, along with interesting nuances such as the possibility of developing historical empathy or using characters as a focus for learning. Connections with the teaching of geography and contents related to acquiring social and civic skills have also been identified, as noted by Zioga et al. (2024).

In this line, the study by Soto-Ardila et al. (2019) on the opinions of future teachers on the didactic use of video games shows that 83% of the participants view their didactic use positively. The authors cite how video games can facilitate playful and motivating learning as a key reason for this positive assessment. This finding is supported by Acosta et al. (2020). Similarly, Campillo & Casado (2022) report positive results on using video games although their research is focused on secondary school students. Studies on video game applications in historical education include Lowe (2009) in ancient history, Radetich & Jakubowicz (2014) in medieval and modern epochs, and Jiménez-Palacios & Cuenca López (2021) and Cuenca Orozco & López Solís (2021) in different historical periods.

OS2 focuses on the conditions under which the selected video games can be effectively used for didactic purposes. All of them have potential for didactic applications in terms of design and content. In this line, Marín-Suelves et al. (2022) considered the growth of interest in this resource and reported a notable increase in the number of papers on the subject in Scopus, reaching 42 in 2019. These data are partly updated by Camuñas-García (2024) in the study on the didactic potential of heritage-based video games for teaching history. Similarly, Ortiz-Clavijo & Cardona-Valencia (2022) highlight the challenges of integrating these tools into educational processes, as in this research. Among these challenges and trends, the joint of video game content with the education curriculum and the efficient use of serious games deserve particular attention.

Regarding OS3, some of the video games have didactic or technical advantages that would facilitate their integration into pedagogical processes. Among them, Jiménez-Becerra & Escobar-Mahecha (2016) highlight the realism of the historical contexts and the capacity for students to become immersed in historical processes, whereas Valverde-Berrocoso (2010) stress the potential of this tool to foster historical empathy through immersion in the historical period under study. In their psychological analysis of the didactic use of video games, Granic et al. (2014) underline the potential of video games to enhance creativity and facilitate the acquisition of skills related to self-management of learning. The main challenges are likely associated with the technical and/or economic requirements for implementing these video games in the classroom. In this regard, Delgado-Algarra (2018) identifies several technical challenges, while Marín-Suelves et al. (2022) describe the technological requirements this usage would entail. It can be concluded that video games are a valuable

educational resource if they are used appropriately and with the correct timing López-Agudo et al. (2020). This demands specific training for educators.

Finally, it bears noting that the present study is not without limitations. For instance, it did not consider other video games that could have been selected for inclusion. Likewise, the results could be enhanced by implementing a didactic intervention that introduces these video games into the classroom and subsequently analyses the resulting data. Future research will explore these possibilities.

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