




GENDER PERSPECTIVES ON EDUCATIONAL CONTRIBUTIONS TO THE STUDY OF VIDEO GAMING: A BASELINE FEMINIST GENEALOGY

Cristina Valdés-Argüelles* , Aquilina Fueyo Gutiérrez , María Verdeja 

University of Oviedo (Spain)

*Corresponding author: valdescristina@uniovi.es
mafueyo@uniovi.es, verdejamaria@uniovi.es

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Abstract

As video games have evolved, they have emerged as useful tools in areas such as education, tackling global issues through their storylines and mechanics. However, never in the history of video games, not even today, has there been parity in the proportion of women directly employed in the development of video games. This paper is part of a broader research project undertaken in the context of a doctoral thesis within the framework of the R+D+I project ‘*Building global citizenship with young people: researching transformative practices with participatory and inclusive methodologies*’. It provides a historical perspective on video games and their place in culture and society, and attempts to outline a brief genealogy of the contributions of pioneering women in the video game industry. Recognising the work of women and addressing gender representation in video games is now a matter of great importance. Current trends in the video game industry reflect the impact of the pandemic on video game consumption habits, its expected continued growth in the future and its relationship with the development of virtual and augmented reality. Video games are therefore likely to remain an important part of culture and society in the future, with an ever-increasing role in education. It is therefore imperative to showcase the achievements of women in the video game industry, to highlight inequalities and to provide girls with genuine role models.

Keywords – History of video games, Gender perspective, Education, Women, Genealogy.

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1. Introduction

As far back as the end of the twentieth century, García-Jiménez (1993) described video games as cultural symbols that offer a particular way of interpreting the world, its phenomena and events. Understanding the emergence and development of video games is therefore necessary, as their evolution may potentially shape future forms of storytelling (Levis, 2013) and also have a profound impact on educational processes (Galindo-Domínguez, 2019). In fact, as video games have evolved from simple arcade games to more complex, interactive and immersive experiences, their educational potential has increased. Some video games have found ways to integrate global issues such as social justice, cultural diversity and

environmental sustainability into their storylines and game mechanics (Moreno, 2021; Pérez-Pereiro, Sobrino-Freire & Rodríguez-Castro, 2022).

As such, the unique social and cultural characteristics of a society at any given time shape trends in game and video game design. Games and video games can and should therefore be studied as dramatic representations of fundamental aspects of our lives, firmly embedded in the culture to which they belong (Pérez-Latorre, 2012). It follows that insights into the historical background of video games provide us with a broader perspective on issues that have a direct impact on the gaming industry and also permeate the world of education and employment, such as gender discrimination. Various studies (Grañeras-Pastrana, Moreno-Sánchez & Isidoro-Calle, 2022; Observatorio Nacional de Tecnología y Sociedad, 2023; World Economic Forum, 2023) have shown that, due to structural processes, girls and young women are increasingly excluded from STEM (Science, Technology, Engineering and Mathematics) studies from a very early age. Furthermore, factors influencing young women's decision-making processes are discouraging them from pursuing STEM subjects at university level, with only 30% of women enrolled in these subjects (Grañeras-Pastrana et al., 2022).

According to the World Economic Forum's Global Gender Gap Report 2023, women are poorly represented in the employment sectors that will play the biggest role in driving the economy in the future, particularly those related to environmental transition and digital transformation (World Economic Forum, 2023). By the same token, in Spain, women make up only 17.8% of the employed population with a STEM background. A further statistic that illustrates the gender gap in this field of study reveals that in 2020, Spain had 12.3 female STEM graduates per 1,000 inhabitants aged 20-29, compared to 29.2 male STEM graduates. Women are also in the minority in university and vocational engineering and computing courses. These disparities are also reflected in the labour market. In 2021, only 19.4% of all ICT professionals in Spain were women. Moreover, of the entire employed population, 6.2% are male ICT professionals, while only 1.7% are female ICT professionals (Observatorio Nacional de Tecnología y Sociedad, 2023). The parallels with the data we have examined from the video game realm are overwhelming. Texts on the history of video games often gloss over women's contributions or omit them altogether. However, women have been involved in the industry since its inception and over the years have made and continue to make varied and significant contributions, despite the challenges and inequalities they have historically faced in the gaming sector, many of which persist today. The aim of this paper is to raise awareness and underline the importance of recognising and valuing these contributions in order to remove the barriers that prevent women from having a full and equal footing in the industry (Santana, 2021).

Today, video games are ubiquitous in our daily lives and are becoming increasingly important in education. For this reason, familiarity with the evolution of video games can provide insight into a medium that has a particular influence on and relevance in students' lives. Tailoring the educational process in a meaningful and stimulating way means recognising the environments in which students move and interact, using the same languages, elements and tools that are part of their daily lives in order to create meaningful and motivating learning experiences that resonate with their everyday reality. To do this, we need to familiarise ourselves with the evolution of the video gaming landscape. This paper therefore provides a brief overview of the emergence of video games associated with the values of white Western hegemonic masculinity. From there, we will trace a genealogy that allows us to showcase the contributions of pioneering women in the video game industry. Reclaiming the contributions of these women can help to offset the under-representation of women and its impact on their interest (or lack thereof) in computing and programming, which in turn has a detrimental effect on their education and performance in an increasingly technological world (Urbina-Ramírez, Riera-Forteza, Ortego-Hernando & Gibert-Martorell, 2002; Cooper, 2006).

2. The Historical Trajectory of Video Games: A Backdrop of White Western Masculinity

The origins of video games can be traced back to the early days of computer development, harnessing the potential of early computers to create interactive entertainment experiences. From the very beginning, the

tech world has been particularly resistant to the discoveries and contributions of women, despite their groundbreaking work in programming (Amores, 2023). As Méndez-Martínez (2017) notes, women were completely excluded from the world of computer and video games. These areas were traditionally labelled as ‘men’s stuff’ due to their links to rationality, technology and violence (a characteristic also historically ascribed to most video games), but not to traits such as affection, tenderness, care and social obligations. In this way, hegemonic masculinity has become inextricably linked to technological competences and skills, while femininity has been portrayed as lacking in these areas (Jenson & de Castell, 2008; Márquez, 2014).

However, despite the initial lack of interactivity, the ability for players to control what happened on the screen made video games very appealing to the public. The transformation of the computer into a machine that is not only an effective work tool but also a versatile source of entertainment owes much to the impact of video games on leisure patterns (Levis, 2013). With advances in technology, video games became a huge and influential industry that continues to grow to this day. Figure 1 shows a timeline charting the major milestones in the history of video games from 1952 to 2020.



Figure 1. Timeline: A history of video games

2.1. Background of Video Games

While the emergence of video games is closely linked to the development of computing, the origins of computers and the Internet have strong ties to the military. From the outset, computing and the military have always enjoyed a symbiotic relationship, with the earliest computers being designed exclusively for military purposes. Furthermore, like some communication media, video games have also benefited from technological innovations developed for military purposes, such as 2D and 3D image generation, feedback systems and so on (Levis, 2013).

It is also interesting to note that many of the video games created for a predominantly male audience focus on action or war themes. In this regard, research is currently underway into the portrayal of military

conflicts in video games (Paredes-Otero, 2019; González-Vázquez & Igartua, 2020). In the same vein, a study by Cole (2014) showed that the discourses of men who espouse traditional cultural values of masculinity in terms of domination, destruction and strength were reproduced, at least in part, due to the influence of childhood video games. Discourse studies have thus proven to be an important tool for research into video games in certain socio-cultural contexts (Etura-Hernández, Gutiérrez-Sanz & Gómez-García, 2022).

Another example of the relationship between video games and the military sector is ‘game theory’ (von Neumann & Morgenstern, 1944). This theory was the brainchild of John von Neumann and had important strategic military applications, laying the theoretical foundations for the development of video games involving strategic decision making. It is a mathematical approach used to analyse strategic behaviour in interactive situations involving two or more players. John von Neumann also had a hand in the development of the atomic bomb and is credited with defining the principle that underpins the operation of all computers today, which led to the creation of the first video game consoles (Aris, 2006). Yet it was Klara Dán von Neumann (1911-1963) who trained the team of meteorologists responsible for the project to programme the ENIAC machine and checked the final code. Despite having no previous mathematical training, she was a self-taught programmer. Paradoxically, Klara Dán von Neumann lived in the shadow of her husband, who was unquestionably a brilliant scientist. However, while he is still remembered and celebrated by society today, she was overlooked and even now her contribution is largely unrecognised by the vast majority of people (Sánchez, 2017).

2.2. The 1950s. The Prehistoric Era

In 1952, Alexander Shafto Douglas (1921-2010) defended his doctoral thesis in mathematics at Cambridge University on the subject of human-computer interaction. This thesis included a version of tic-tac-toe known as OXO (Figure 2), which pitted a human against the Electronic Delay Storage Automatic Calculator (EDSAC), the first machine capable of storing electronic programs. OXO failed to gain any kind of traction or impact because, aside from being a research paper, it was only playable on the EDSAC in Cambridge, which happened to be a one-off (Piqué, 2011). Later, in 1958, William (Willy) Higginbotham (1910-1994), a physicist at Brookhaven National Laboratories, decided to develop an interactive game. Using an oscilloscope, an analogue computer and a few switches, he created a simple two-player tennis game in which a small square ball bounced on the screen with the players hitting it with their rackets. This game was known as Tennis for Two (Figure 2). Higginbotham never patented his invention as he felt that the sole purpose of the game was to stimulate scientific curiosity and briefly entertain visitors to his laboratory (Jolival, 1994).



Figure 2. The 1950s and 1960s

2.3. The 1960s. First Steps in the World of Video Games

Four years later, in 1962, Steve Russell (1937-present), a student at the Massachusetts Institute of Technology (MIT), collaborated with other classmates to create Spacewar! Russell's game featured a major technological innovation, the cathode ray tube display, and had a major impact on the computing community at the time (Levis, 2013). In the late 1960s, engineer Ralph H. Baer (1921-1997), together with Albert Maricon and Ted Dabney, conceived the idea of playing some kind of game on the television screen. In 1966, Baer designed the prototype of the first console to be used with a home television set. Despite his groundbreaking idea, Baer was forced to approach company after company in search of funding for his project (Díez-Gutiérrez, Terrón-Bañuelos, García-Gordón, Rojo-Fernández, Cano-González, Blanco-Jorrín et al., 2004; Belli & López, 2008).

Although some electronic games did appear during this decade, their popularity remained very limited as technology had not yet advanced to the point where more sophisticated video games could be developed. Generally speaking, however, the decade saw significant technological and scientific progress, with advances in computer science and electronics paving the way for the creation of the video games that followed (López-Redondo, 2016).

2.4. The 1970s. The Birth of Atari

In 1971, a company acquired the technology from Baer's project and began commercial development of the first home video game system, known as Odyssey. It was a very basic machine that generated two square dots representing the two players (the rackets), a ball and a central line. There were no sound effects and no way of keeping track of the points tally, which meant that players had to keep score mentally (Piqué, 2011). Meanwhile, at the beginning of the same decade, Nolan Bushnell (1943) developed Computer Space, a simplified single-player version of the game devised by Russell almost ten years earlier. In 1972, Bushnell and Ted Dabney founded the historic Atari company. After testing the Odyssey table tennis game, Bushnell hired one of its programmers, Alan Alcorn. Together, Alcorn and Bushnell created the first successful arcade game using Willy Higginbotham's idea as inspiration. Pong was the first coin-operated game to become a huge success, making Atari the fastest growing company in America (Piqué, 2011). Figure 3 shows the Pong video game and the main consoles from the 1970s and 1980s.



Figure 3. The 1970s and 1980s

Following this, Atari launched its first home video game console in 1977, the Atari 2600, which quickly became a bestseller (Wolf, 2008). Nolan Bushnell is therefore regarded as one of the forefathers of the video game industry, having co-founded one of its most important companies. Meanwhile, one of the 'mothers' of video gaming is Carol Shaw, a pioneering video game programmer who worked at Atari during this decade. Her work has gone down in the history of video games and has inspired many women to pursue careers in video game programming and design (Kent, 2001). Another significant figure in the

video game industry during this decade was Joyce Weisbecker, who began developing video games in 1976. However, it was not until the end of 2017 that she was acknowledged as the first female video game developer (Cano-Pérez, 2018).

2.5. The 1980s. The Arcade and Platform Revolution

The early 1980s saw the arrival of PC computers, Phillips' Odyssey 2 and Mattel's Intellivision video game system. The 1980s also marked the debut of one of the most iconic video games, Pac-Man, developed by Namco (Hansen, 2018). Donkey Kong, designed by Shigeru Miyamoto, also made its first appearance in 1981. This game gave life to Mario, one of the most enduring and important characters in video game lore, although at the time he was a carpenter by the name of Jumpman. As a result, video games in the 1970s and 1980s were often almost entirely devoid of female characters. Playable characters were overwhelmingly male, with female protagonists rarely appearing in games (Martinez, 2019).

In 1982, the year after the release of Donkey Kong, everyone wanted a piece of the video game business, but by 1983 companies such as Mattel and Atari were losing money due to the poor quality of their games (Díez-Gutiérrez et al., 2004). Nevertheless, this was a decade of great popularity for video games, particularly for arcades and also for the Nintendo Entertainment System (NES) home console. Known for its widespread appeal in the 1980s and early 1990s, the NES has been hailed as the defining console of the video game industry at the time (Donovan, 2018).

2.6. The 1990s. The Home Console Era

This decade is marked by the influx and notable impact of home consoles. As Levis (2013) notes, 'in the early 1990s, arcade attendance was affected by the explosion of the home video game market and the economic downturn' (p. 146). To make matters worse, arcade games were becoming increasingly expensive to produce and maintain, which meant difficulties for video game arcades in retaining their audiences. Video game consoles took a major technical leap forward with the so-called '16-bit generation', which included the Mega Drive, Nintendo's Super Famicom (renamed the Super Nintendo Entertainment System or Super NES in the West) and Capcom's CPS Changer (Belli & López, 2008). In the mid-1990s, in 1994, the American rating system known as the Entertainment Software Rating Board (ESRB) was introduced. However, with the exception of the UK and Germany, no country in the European Union had put in place mechanisms to regulate the content of home video games (Levis, 2013). By the end of the decade, the most popular console was the Playstation (Figure 4), with titles such as Final Fantasy VII (Square), Resident Evil (Capcom), Gran Turismo (Polyphony Digital) and so on (Belli & López, 2008).



Figure 4. The 1990s and 2000s

2.7. The 2000s. The Home Console Companies Face Off

Sony launched the PlayStation 2 in 2000, which was followed by Microsoft's entry into the console industry with the Xbox in 2001 (Figure 4). Meanwhile, Nintendo launched the Gamecube, the successor to the Nintendo 64, and the Game Boy Advance. Sega announced its decision to halt development of the Dreamcast and exit hardware production, switching to software development only in 2002. Two other new handheld consoles launched in 2004 were the Nintendo DS and the PlayStation Portable (PSP). Ubisoft's Imagine series of video games for the Nintendo DS system encouraged girls to 'imagine' themselves as cooks, babysitters, fashion designers and so on. However, there were no titles inviting them to imagine themselves as mechanics, engineers, police officers or any other traditionally male-dominated profession. In Western countries, both consoles enjoyed similar success, but in Japan in particular, the Nintendo DS was a huge hit, far outstripping the PSP. The latter part of 2005 saw the release of the Xbox 360, the first of the seventh generation of video game consoles. The year 2006 then marked the continuation of the next-generation launches in the form of two new consoles: Sony's PlayStation 3 and Nintendo's Wii (formerly known as Nintendo Revolution) (Belli & López, 2008). At the end of the decade, in 2009, Anita Sarkeesian founded Feminist Frequency with the aim of challenging the portrayal of women in video games and advocating for a more inclusive media landscape (Feminist Frequency, 2022).

2.8. The 2010s. Explosion of the Indies

This decade was a time of great change and progress in the video game industry, laying the groundwork for the developments that would follow in the 2020s. In particular, the rise in popularity of streaming platforms such as Twitch and YouTube has transformed the way gamers interact with video games. These platforms allow gamers to livestream their games and share their gaming experiences with a global audience. One of the outstanding trends of the 2010s was the boom in indie games. Platforms such as Steam have made it easier for independent and indie game developers to create and distribute their games without having to rely on major companies. However, 2010 also saw the release of some very commercially successful games, such as Grand Theft Auto 5 and God of War. This success can be attributed to the launch of several new game consoles, such as the PlayStation 4, Xbox One and Nintendo Switch (Figure 5). Similarly, when it comes to mobile and tablet gaming, the decade's standout titles in terms of popularity are Angry Birds and Candy Crush Saga, both of which were launched onto the market in 2012.



Figure 5. The 2010s and 2020s.

The whole of the 2010s also saw tremendous huge growth in e-sports, especially in Spain. A key moment in 2010 was the creation of the League of Video Games Professionals (LVP: *Liga de Videojuegos Profesional*), which has become one of the premier e-sports organisations not only in Spain, but across Europe. In 2016, a Spanish team won the League of Legends World Championship, one of the most prestigious

e-sports tournaments in the world. This triumph further boosted interest and investment in e-sports in Spain (Bascón-Seda & Rodríguez-Sánchez, 2020). Meanwhile, the issue of gender inequality in video gaming was questioned during this decade (Castellanos-Torres, Eng-Broca & Cobano, 2021; Santana, 2020). In 2014, the so-called Gamergate affair took place, an episode that also left its mark on this decade (Chess & Shaw, 2015). Gamergate started out as a call for greater journalistic impartiality in the industry and ended up as a wave of online violence and harassment, particularly targeting women who were critical of the gaming industry. This harassment unfolded on platforms such as Twitter, 4chan, YouTube and Reddit, among others (Dewey, 2014; Hanash-Martínez, 2020).

Ultimately, this wave of harassment culminated in an anonymous email threatening to carry out the bloodiest shooting in US history at the University of Utah, where Anita Sarkeesian was due to give a talk on the role of women in video games (McDonald, 2014).

2.9. The 2020s. The Future of Video Games is Female

The coronavirus pandemic disrupted the traditional business model of cultural industries, including video games. In 2020, especially during lockdown months, video games became the preferred option for entertainment and safe socialising when family and friends were separated. Consequently, digital sales of video games surged in volume and there was a notable uptick in the number of people playing video games (Spanish Video Game Association [AEVI], 2020). It was also during this decade that cloud gaming, a technology that allows people to access video games remotely via the internet, finally hit the market. As a result, major players in the video game industry have developed platforms that allow users to play games online without having to download them first (Longan, Dimita, Michels & Millard, 2022). This decade has also seen greater investment in virtual and augmented reality, leading to the creation of more immersive gaming experiences that may also have huge potential in the educational sector (Warner, 2020).

Although it is difficult to predict how the video gaming industry will evolve over the remainder of the decade, it is likely that certain trends, such as continued growth in industry revenues, will continue and flourish as a result of the increasing global interest in video games as a form of leisure and entertainment. Similarly, cloud gaming is likely to continue to gain traction, as is mobile gaming. Virtual and augmented reality is also expected to play an increasingly important role in the industry, as new applications of this technology in video games continue to be developed. Meanwhile, according to the Spanish Association of Video Games and Entertainment Software Producers and Development Companies (Asociación Española de Empresas Productoras y Desarrolladoras de Videojuegos y Software de Entretenimiento [DEV], 2022), there is a growing number of e-sports enthusiasts and popularity in this area is expected to continue to climb. At this point, it is worth noting that video games are entering the formal education system in a variety of ways. In the United States, for example, the University of Kentucky and Ohio State University offer e-sports programmes, while Marquette University launched the first national team in 2019 (Manpowergroup, 2021).

Regrettably, at no point in the history of video games, and even today, has there ever been an equal proportion of women directly employed in video game development (Trivi, 2018). In Spain, 57% of video game studios still lack specific policies to promote diversity and gender equality among their staff, and only 52% of studios have protocols in place to deal with cases of harassment or discrimination (Asociación Española de Empresas Productoras y Desarrolladoras de Videojuegos y Software de Entretenimiento [DEV], 2022: page 28). What is more, a number of major companies are currently involved in legal proceedings on grounds of discrimination or are in the process of paying compensation to victims. The gaming industry therefore needs to make significant changes to give a voice to women, ethnic minorities, the LGTBI community and people with disabilities (Asociación Española de Empresas Productoras y Desarrolladoras de Videojuegos y Software de Entretenimiento [DEV], 2022). As Trivi (2018) remarks, ‘the future belongs to women; the past, not so much’ (Trivi, 2018: page 41).

3. A Brief Genealogy of Pioneering Women Writing the Future of Video Games

Some of the history books on video gaming, much like in other branches of knowledge, have ignored or glossed over the contributions of women in the video game industry (Bjørn & Rosner, 2022). Furthermore, a number of authors (Castaño, 2008; Gil-Juárez, Feliu & Vitores, 2010; Castaño & Webster, 2011) have identified a gender gap in video gaming, potentially leading to fewer women pursuing careers in the sector. A study conducted by Santana (2020) found that more than half of respondents did not know of any female role models professionally involved in the world of video games, either as designers or as e-sports competitors. This figure rose to over 70% when only women were surveyed. Yet, despite this lack of awareness, there is a long line of pioneering women who have left a significant mark on the creation and development of video games, demonstrating that women are also influential creators and leaders in this field.

To begin with, there is Dona Bailey, an American video game programmer who was one of the first women to work for the Atari company. Bailey left video game development and ended her professional career as a professor in the Department of Rhetoric and Writing Studies at the University of Arkansas, where she taught until her retirement (Luna, 2019). Carla Meninsky is also a former video game designer and programmer. Along with Carol Shaw (co-creator of 3-D Tic-Tac-Toe and River Raid), she was one of the few female engineers at Atari dedicated to developing cartridge-based video games. She eventually left the video game world to become an intellectual property lawyer. In 2017, Carol Shaw was also honoured with the Industry Icon Award by The Game Awards in recognition of her contributions to the video game industry as a programmer (Luna, 2018).

Continuing this roster of influential women is Danielle Buntin-Berry (2024), an American transgender video game designer and programmer who is regarded as a pioneer and trailblazer in the field of multiplayer video games. Danielle had a difficult childhood, during which she turned to video games for solace. She eventually left the video game industry to embark on her gender transition journey.

Brenda Laurel (2016), an American game designer and researcher, is known for championing diversity and inclusion in video games. She is also a pioneer in the development of virtual reality, a public speaker and a university professor. She has also held positions within several companies and organisations, working for Atari, co-founding the video game label Purple Moon, and consulting for a range of businesses including Sony Pictures, Apple and Citibank.

Meanwhile, Roberta Williams is an American video game designer and writer who is considered to be one of the key figures in the history of video games. She co-founded Sierra On-Line, later known as Sierra Entertainment, with her husband Ken Williams. She is best known for her groundbreaking work in graphic adventure games, with some of the most notable titles including *Mystery House*, the *King's Quest* saga and *Phantasmagoria*. In the same vein, there is Amy Henning, another American video game director and scriptwriter, who started out working for the Nintendo Entertainment System and went on to work for Crystal Dynamics and *Naughty Dog* (Sark, 2010).

Similarly, Janese Swanson was an American software developer responsible for creating the first educational video game, *Carmen Sandiego*. Her involvement with educational video games began when she was manager of the computer and technology department of a small shop called *My Child's Destiny*. With a keen interest in the intersection of technology and education, she graduated from the University of Berkeley while raising her daughter. In 1988, Swanson joined Broderbund Software Company to develop educational video games for children. However, she faced many challenges in the male-dominated world of technology and eventually resigned from her position. She went on to earn a PhD from San Francisco State University and in 1995 founded her own toy company, *Girl Tech*, with the aim of creating products to make technology more appealing to girls. Three years later, she sold the company to Radica Games Limited for \$6 million.

Also from the United States is Bonnie Ross, a video game developer who served as corporate vice president of Xbox Game Studios and head of 343 Industries, the subsidiary studio behind the *Halo* video

game franchise. During this time, she was a staunch advocate for women and diversity in the video game industry and played a key role in creating the Microsoft Women in Gaming community. Meanwhile, Mie Kumagai is a video game producer who has worked for Sega and was one of the first women to ascend to the position of president. Rieko Kodama is a video game designer who has also worked for Sega for over 30 years. Her career earned her the Pioneer Award at the Game Developers Choice Awards in 2018 (Luna, 2020).

Finally, Brenda Romero is a game designer and developer who has received many accolades throughout her long career. In 2007, she was named one of the top 100 most influential women in the gaming industry by Next Generation magazine (Hepler, 2019). However, this genealogy shows us that despite their different origins and backgrounds, many of these women share the common experience of having abandoned the video game industry. While they left for a variety of reasons, one underlying motive seems to be that they found it to be a hostile environment. It is not possible to make a complete compilation of the contributions of all women in the world of video gaming, but it is appropriate to highlight the contributions of these women. They blazed the trail in the industry for countless others, often without enjoying the recognition they rightly deserve for their work (Figure 6).



Figure 6. Women in video gaming history

The work of many other women, such as Kellee Santiago, co-founder of Thatgamecompany studio, is also worthy of special mention. She is also a fierce advocate for diversity and inclusion in the video game industry, earning recognition for her work in this area. We also highlight Jane Jensen, Soraya Saga, Kimberly Swift and Robin Hunicke, among others. Thankfully, these are just a handful of examples of the women who have made and are making history in the world of video games. The full roster of distinguished figures is far more extensive. The growth in the number of female video game players, designers and programmers bodes well for the future. However, there remains a need for further programmes and initiatives to encourage more women to take an active role in the video game industry (Contreras-Espinosa, 2021). From an educational perspective, the construction of genealogies that can compensate for the lack of female role models in the field is crucial to closing the gender gap, both within

the gaming industry and in terms of girls' and young women's access to this cultural product. As Cano-Pérez (2018) observes, 'without role models, there will be even fewer in the future' (p. 58). We would also recommend initiatives designed to increase the visibility of female developers, as well as awareness-raising campaigns. Examples worth emulating from the world of science and technology include No More Matildas, promoted by the Spanish Association of Women Researchers and Technologists (AMIT) (Asociación de Mujeres Investigadoras y Tecnólogas [AMIT], 2024), *Cuéntame Cómo Dedicarme a la Ciencia*, promoted by the National Museum of Natural Sciences, *Mujeres Con Ciencia*, promoted by the University of the Basque Country, and the websites Beyond Curie, 500 Women Scientists (2024) and Women in Engineering.

4. Some Final Thoughts

Video games have evolved over the last few decades and have succeeded in incorporating the latest technological advances, a decisive factor in their popularity among the general public. Throughout the history of their development, it is possible to identify themes that have persisted from their beginnings to the present day. These include, for example, the slow pace of women's inclusion due to their lack of visibility and the rivalry between different companies to dominate (and sometimes even monopolise) the market. Reflecting on the trajectory of the video game industry allows us to gain insights into its current state and its prospects for the future, particularly in the areas of education and gender equality. The genealogy provided in this work is therefore a useful starting point for promoting the inclusion in curricula of women's contributions in a field that can be highly attractive to young people.

With the constant reinvention of the video game industry over the years, far from waning in interest, video games are now more embedded in our lives than ever before. Particularly during the months of lockdown, video games proved to be one of the most sought-after options for entertainment and remote socialising, leading to a notable rise in the number of people playing video games. However, there is still a need for further research, programmes and initiatives to encourage greater participation of women at all levels within the video game industry. Hence the importance of research and publications that highlight the role played by women. The baseline information contained in this paper can serve as a springboard for activities such as case study analysis or the creation of safe educational spaces where young women can explore their interests in this area.

The advent of different types of educational video games, known as serious games, introduced the prospect of bringing video game technology into the classroom for the first time and opened up a wider range of possibilities for delivering educational content in new ways. Janese Swanson, a pioneering developer in the video game industry, was responsible for the first educational video game. However, achieving equal representation of women in the video game industry remains a work in progress. Despite the prevailing inequality and lack of role models, there is evidence that raising the profile of women in the field can help to motivate other women and girls. It is therefore essential to find a way to begin to tell the 'forgotten story' of women who have made significant contributions to a field that not only erases them, but also pushes them out in a number of very effective ways. This brief genealogy is closely aligned with various feminist movements that have recently reclaimed the role of women in the world of video games. These movements have also condemned the pressures often faced by female gamers, including cases of violence and harassment reported by some successful female gamers and streamers (Amores, 2023).

In addition, exposure to video games, albeit from a critical perspective, can be beneficial not only to students' digital literacy, but also to their own self-image. In the case of male gamers, the opportunity to share this fun and educational activity with their female counterparts early on, and to reflect on the stereotypes they are exposed to, opens up the possibility of bringing about change in the world of video games. In this regard, a few guides have been developed, such as *Empantalladas* (Castellanos-Torres et al., 2021) and *Dale Play a la Igualdad* (Santana, 2021), which can be useful for tackling gender equality in video games in the classroom. There is also a need for teacher training in gender equality that covers areas of interest to young people, such as the world of video games. This will allow the development of more inclusive teaching practices and methodologies, as well as didactic materials that use video games to

address global issues in a more egalitarian and equitable way. Putting these strategies into practice requires a shared commitment from educators, educational institutions, families and society at large in order to build a more inclusive and equitable educational environment.

This paper therefore lays the groundwork for further discussion and critical analysis of the role that women have played in the video game industry, while also allowing for an analysis of the challenges women face that may have deterred many of them from working in or enjoying the world of video games. In conclusion, video games have come a long way from their origins to the present day, leaving their mark not only on the entertainment and technology industries, but also in many other areas such as education. There is no doubt that the future of video games will continue to be shaped by major technological innovations. Video games and gamification are being used increasingly in education. There is therefore a need for ongoing education and research to both underpin their use and identify potential risks and pitfalls. Video games have left a lasting impression on culture and society, and they will continue to evolve and surprise us in the future. However, issues will inevitably arise that need to be addressed in the classroom. In the video game universe, women too can become strategists and heroines, forging their own legends and embarking on adventures that evoke real emotions, as the line between what is virtual and what is real becomes increasingly blurred. It is up to us to decide what role we will play both inside and outside this universe. *Game Over! Continue?*

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