Videogames in Education and Culture

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Abstract: This document presents the highlights of the influence of video games on teaching and disseminating culture in recent years. An exhaustive review was carried out on how education has benefited and enhanced using video games and their technological advances and their benefits to ensure the continuity of the curricula during the COVID-19 pandemic. Video games and their constant developments provide a tool that fosters the competencies and skills of students at all educational levels. New and better playful experiences have been developed that present players with more immersive situations are encouraging students to a greater interest in their learning process.

Keywords: Video games, Education, Culture, Teaching.

Videojuegos en la Educación y la Cultura

Resumen: En este documento se presentan los aspectos más destacados sobre la influencia de los videojuegos en los procesos de enseñanza y difusión de la cultura en los últimos años. Se realizó una revisión exhaustiva sobre la manera en que la educación se ha visto beneficiada y potenciada por el uso de videojuegos y sus avances tecnológicos, así como sus beneficios para asegurar la continuidad de los planes de estudio en tiempos de pandemia por COVID-19. Los videojuegos y sus constantes desarrollos proporcionan una herramienta que fomenta las competencias y habilidades de los estudiantes en todos los niveles educativos, se han desarrollado nuevas y mejores experiencias lúdicas que presentan a los jugadores situaciones más inmersivas fomentando en los estudiantes un mayor interés en su proceso de aprendizaje

Palabras Clave: Videojuego, Educación, Cultura, Enseñanza.

I.INTRODUCTION

Studies have been addressed considering multiple points of view of users, psychologists, educators, and video game creators who have seen an opportunity for teaching innovation in the educational aspect. Using video games encourages users' communicative attitudes regardless of origins and beliefs and allows collaborative work. The dynamic visualisation that accompanies video games facilitates the dissemination of knowledge using three-dimensional graphics that make the experience more attractive for students [1].

A new feature that videogames have today is the co-creation of content from a dynamic system of interaction that promotes participation, information, and dissemination of knowledge, which in turn allows promoting the critical thinking of users.

At present, many children and young people occupy video games as an entertainment option, in some cases, in addition, skills and abilities are developed. Due to the early contact that many children have with technology, the skills in the use of video games are easily acquired and offer great advantages compared to previous times, causing a transformation in interaction with other students, encouraging storytelling, facilitating activities, and improving learning. The ability to play with other users online improves interactions in two styles: social-mediated interaction between players and interaction between the player and the interface [2].

Many of the people related to the Gamer culture, use new live-streaming platforms, which are a new option to create a network of followers and even generate economic benefits, these are seen by many companies as a new way to advertise to young people and thus generate influence on consumers, where the goal is to encourage them to buy those games that are very popular in an environment.

II.DEVELOPMENT

This section presents some aspects that have been evidenced about the impact of video games and their technologies in the field of education and culture.

A.Influence of video games on education

Since video games appeared as a leisure and hobby option, their contribution to intellectual development and learning has been evaluated, improving teaching or the acquisition and improvement of specific cognitive skills in people who consume this type of entertainment. Currently, video games are used for recreational purposes within educational institutions looking for ways to attract the attention and concentration of students. Video games can strengthen attitudes such as perseverance, commitment, or effort, facilitate learning, and dynamically provide information to players. In addition, it has been proven that video games have a wide correspondence in the development of skills such as spatial processing, mathematical analysis, and computational analytical thinking [3].

According to, it is proposed that video games are a versatile technological tool fully integrated into society and can be directed to be used as a didactic element, taking advantage of its playful advantages. The communication of visual languages, sound effects, textual and graphics, can be better used within the class with the use of video games.

Video games can be used as a strategy to encourage reading habits since they have textual content and interaction boxes that allow the player to increase their concentration and improve their reading abilities. In addition, video games can favour phonetic development in word reading, comprehension, vocabulary, or memory performance [4]. It has been proven that the cognitive capacity developed depends on the genre of video game used, some of these abilities are the improvement of memory, comprehension, problem-solving, visual skills, perceptual discrimination, and spatial coordination.

Creativity is a skill of the human being, is also one of the primary objectives of education, therefore, video games such as Minecraft allow the player to create environments with infinite possibilities for their interaction. This video game has already been used in schools in Europe for several years [5].

Many of the skills that video games strengthen are widely used and demanded in adult life, such as the ability to solve problems and conflicts, rapid decision-making, and the ability to communicate information concisely and effectively.

With a moderate time of use of video games, children can improve some aspects such as response time, teamwork, creativity, focus, visual memory, strategy, leadership, improvement in language learning, and critical thinking [6].

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Some platforms are used for the development of computational thinking in children, a clear example is a software called: SCRATCH, whose methodology allows children to create video games through a simpler programming language making this activity-friendly and attractive for early ages due to its functionality with blocks that contain different commands that encourage the use of the logic of the infant.

The most prestigious companies, today, look for those professionals who possess skills such as handling teamwork, efficient communication, punctuality, decision making under pressure, critical thinking, concentration, competitive strategy, among others, it is for this reason that video games have reached a level of integration complexity that together with practice allow to develop and strengthen the skills mentioned above. In several video games, to reach high levels, more than skill, qualities are valued to overcome challenges. Practices such as the applied to the workplace, show results such as increased productivity, leadership, problem-solving in critical situations, ability to communicate correctly in a concise way and work as a team to achieve objectives [7].

Given the current circumstances due to the effect of COVID-19, teachers have had to incorporate virtual alternatives to supplant recreational and practical activities. An example of this is the case of a history teacher, who cannot take his students to Greece, has chosen to teach Greek history and culture through the video game Assassin's Creed, which presents its plot in Ancient Greece, so that students when playing can know scenarios of that time and at the end make a report of their learning.

Due to the adaptation of new teaching strategies by teachers, video game developers have improved access on their platforms to educators, so that they use their video games as teaching methods for respective subjects [62]. This is the case of the video game called CAFET which consists of a card game where players represent the entrepreneurs of the coffee industry in Colombia. Following this, a study [8] analyzed how video games can develop innovation skills and understand observed behaviours. The results showed that participants perform actions that can engage and develop the innovator's DNA skills, specifically observe, associate and experiment.

Video games, today, are used as a powerful curricular resource within education [64], which has been used by teachers to motivate students of the new generation of "digital natives" through educational tools that meet their learning expectations motivating them towards knowledge, making the classroom a dynamic space, participatory and attractive. Serious games, gamification, and virtual reality are considered suitable to contribute to the social need to engage and entertain in learning and whose use has been accepted by the government of many countries by incorporating them into their educational programs [9].

According to [68, 69], a video game has to be of three types: sensorimotor, symbolic and rule-based. The first allows children to experiment with the movement of their body; symbolic play transfers experiences and fantasies about objects and actions important for the growth of the individual and finally, the game of rules that allows children to free them from egocentrism, leading them to structure models of problem solving (indispensable for growth and personal-social maturation). Video games have been shown to produce improvements in cognitive skills by improving the rate of learning on new tasks, which is associated with "learning to learn" [10].

Some video games have been created to cause interest in certain educational fields, as is the case of "Chemistry: the videogame", or academic programs for the area of mechanical engineering, these developments seek to transform the complexity of conception of problems into more inspiring situations for the student. Facilitating interactive participation can improve performance by at least 14% on the topics addressed in video games.

Longer time in video game use has been associated with a decrease in verbal intelligence, including evidence of changes in increased mean diffusivity in some areas of the brain and regardless of IQ [11].

B.Influence of video games on culture

The video game is considered a product of contemporary culture since it has cultural values that can be reproduced in multiple formats, generating a cultural and industrial development that attracts the attention of the consumer. This influence is representative given that video games are used by a diversity of age groups, genders, sexualities, races, religions, ethnicities, and nationalities; and, in addition, they are present in fields such as education, mobile technology, workplaces, social events, as exhibition support in museums, the development of family interactions and other areas of daily life [12].

The video game industry has developed applications in the cultural field allowing the visualization of three-dimensional figures in motion, from light patterns that are reflected in animations to produce spatial images with transparency.

Within the video game industry, Microsoft Research has set a trend in the development of holographic

systems with its Holodeck project [78], which combines an optical screen and a Kinect camera to recreate an illusion of 3D interaction, whose digital objects respond to stimuli made by the hand, to perform bodily actions, such as: collect and rotate objects [79]. This possibility allows the viewer to manipulate and visualize an object of historical or cultural interest improving the visual quality and user interaction in the plot of the game. The inclusion of holograms is limited by processing capacity [13].

An example of a video game that promotes culture is the case of Paper Mario: The Origami King, which pays homage to Japan through a game where Japanese culture is captured throughout the development of this new saga, thus demonstrating locations such as samurai park and popular culture references such as songs and transformations of mythological animals that represent the four elements.

The video game that promotes a culture in Fortnite, is a multiplatform game that creates different themes in each season, allowing the user to experience different survival techniques in each game that is made up of 100 players. The new generations are increasingly involved within this culture that goes hand in hand with technological advancement, thus creating a gamer culture that extends among children and young people.

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The video game has been considered as a new form of art, because it has some fundamental elements that are by the classic concepts that have manifested themselves within the sociology of art, such as: transcending the object, focusing on reactions, and focusing on the sensations it generates in people, thus being a medium that not only allows to entertain people but to create new environments or worlds that help generate knowledge in society [84]. Video games are used as a method of teaching history, whereby involving the player in different scenarios, they can know the culture or way of life of a place, such is the case of the game East of the Rockies, a game that shows students the life of the Japanese throughout the development of World War II.

Some video games use virtual reality, which includes the most important features: (1) It is ideal for the dissemination of archaeological content since it allows an attractive presentation mode thanks to stereo visualization and realistic immersion sensations; (2) provides a high level of detail throughout the sailing experience, without incurring any damage to archaeological remains; (3) allows users to observe more details than they would observe on an on-site visit to the site; (4) makes it possible to convert an archaeological site into portable heritage, opening up the possibility of extending the visit to vulnerable groups, in particular, those with reduced mobility. [15]

In the field of games, film adaptations are an increasingly common feature within modern culture making it more common. The video games played today are different from those played two decades ago, just like the movies we watch, as well as the types of movies you watch about video games differ greatly from those before. How video games adapt cinematic techniques and stories are also different. This is because both media are shaped by the intersection of historical, technological, social, cultural, and economic factors.

III.METHODOLOGY

To obtain the criteria addressed in this document, a bibliographic search was carried out in related scientific articles, websites of video game industries, reports of socialization events of new advances in video games and informative magazines published on the web.

The keywords used in the search were very diverse and specific groups of articles were not located to perform filtering with a significant number.

The review contemplated the criteria and arguments raised from the educational approach and the practicality presented by video games in their contribution to the teaching process.

IV.RESULTS AND DISCUSSION

The educational field has benefited strongly since multiple video games were incorporated into the academic

curriculum at all educational levels.

The reach of video games has expanded to other forms of culture such as cinema, which has gone on to create scripts based on video games. The sculpture has also benefited in the visualization that virtual reality takes through the form of video games that allow a better interaction and experience for the visitor.

Many Universities have chosen to include in their academic programs, the use of video games to strengthen their teaching processes, video games have become more specific in the development of competencies related to some subjects, however, one of the best contributions are video games that allow learning to learn, since, with their use, students strengthen their attitude towards study.

The developments and technologies that have been driven by the advancement of video games are becoming learning tools such as augmented, virtual and mixed reality glasses. It can be considered that these technologies in a short time will be useful not only in the educational aspect but also in all other areas of society.

V.CONCLUSIONS

Playing video games daily improves visual attention span, efficiency in changing and performing tasks, speed in tasks related to visual search or discrimination of objects and tools by colors and shapes. In addition, it contributes to the involvement by achieving multiple objectives and the execution of different tasks in the same temporary space.

Learning with video games is possible. In fact, they present very diverse and generally more playful contexts, which is why they tend to increase the motivation of the youngest. They also help children with learning disabilities or who are at risk of social exclusion. In short, the little ones can learn while having fun through these virtual games.

Sex is a fundamental part in the stories of some video games. The illustration of disproportionate bodies and the presentation of women as a single sexual object causes, in some cases, the assimilation by the players of these factors as if they were real.

Those children who play violent games can be affected in the medium and long term by negative effects that prevent them from developing a sense of social justice and belonging. The absence of dialogue in many video games also encourages violence as a way to resolve conflicts.

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