



ICT and educational video games in the communication of intangible heritage. La Mama Negra, Latacunga-Ecuador

TIC y videojuegos educativos en la comunicación del patrimonio inmaterial. La mama negra Latacunga-Ecuador

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Abstract

This study considers the video games benefit as a learning cultural tool to Ecuadorian intangible heritage. This exploratory research was conducted using a qualitative approach in two stages in the city of Latacunga. The first phase involved interviews with a group of professionals in cultural management areas and software development to gather information about the need and relevance of including cultural content from Ecuadorian intangible heritage, such as the celebration of the "La Mama Negra" festival. This led to the production of video game beta version featuring the characteristics of the popular celebration. The second stage involved testing the video game in a qualitative focus group of 40 individuals aged 13 to 16, which yielded positive results of over 95% in areas such as content, gameplay, perception, and understanding of the popular festival. This confirms the relevance of video games as a resource for learning cultural content for strengthening local identities.

Keywords: ICT, multimedia, video games, intangible heritage, La Mama Negra

Resumen

El presente estudio analiza la utilidad de los videojuegos como herramienta de aprendizaje de contenidos culturales, referentes a contenidos de patrimonios inmateriales ecuatorianos. La investigación es de tipo exploratoria y se llevó a cabo mediante un enfoque cualitativo en dos etapas, en la ciudad de Latacunga. La primera fase se basó en entrevistas para la obtención de información a un grupo de profesionales en áreas de gestión cultural y desarrollo de *software*, para conocer la necesidad y la pertinencia de colocar contenidos culturales del patrimonio intangible ecuatoriano, como lo es la celebración de la fiesta de "La Mama Negra". Esto permitió la producción de una versión beta de un videojuego con las características de la celebración popular. La segunda etapa fue la prueba del videojuego en un grupo de enfoque cualitativo de 40 individuos de edades de 13 a 16 años, del cual se obtuvieron resultados positivos superiores a 95% de aceptación, en áreas como contenidos, jugabilidad, percepción y aprendizaje de fiesta popular. Esto permite confirmar la pertinencia de los videojuegos como recurso de aprendizaje de contenidos culturales para el fortalecimiento de las identidades locales.

Palabras clave: Tecnologías de la Información y la Comunicación, multimedia, videojuegos, patrimonio inmaterial, La Mama Negra

◆ Introducción

This research seeks to analyze the use of technological tools in education as a method to promote cultural interest in the Latacunga City community, Ecuador. Currently, there is a lack of interest in the richness of local identity and culture, as the valuation of external elements prevails, especially among children and young people. These groups adopt foreign characteristics and values through products, activities, games, and visual references, which contributes to the loss of their cultural identity.

In schools, learning about local culture is approached in an unmotivating style, which reduces interest in deepening its knowledge and encourages unfavorable comparisons with other cultures. Currently, teaching prioritizes superficial exposition over meaningful representation, although innovative tools such as roundtables and debates supported by advanced visual resources are used, methodologies that are engaging for students. However, a clear preference for foreign cultural elements prevails in the daily lives of children, youth, and even adults, progressively marginalizing the Latacunga identity. This dynamic has accelerated the loss of ancestral customs and traditions passed down through generations. Given this scenario, the research proposes the strategic use of educational technologies as a means to revive cultural interest and safeguard local identity.

Worldwide, educational methodologies have become key tools for the development of current generations. This advancement has driven a necessary evolution in teaching methods, aiming to bridge the technological gap affecting contemporary education. Within the framework of this research on technology and intangible heritage, this phenomenon is analyzed through the following thematic axes: multimedia, ICT, video games, and their relationship with cultural preservation.

In this scenario, the Integra Foundation implemented an initiative in the Region of Murcia (Spain) using the virtual reality video game "El Misterio de la Encomienda de Ricote," which combines entertainment with historical education. This project demonstrated that it is possible to learn history through playful formats, using integrated assessments to measure content assimilation during the interactive experience. (Egea Vivancos, Arias Ferrer, & García López, 2017).

To understand video game design globally, we can take *World of Warcraft* as an example, a prominent title presented by Blizzard Entertainment at the ECTS in September 2001. This massively multiplayer online role-playing game allows players to control an avatar in a third-person world, where they can explore, fight, interact, and complete quests. Upon its release on November 23, 2004, it received universal critical acclaim. Studies indicate that players of *World of Warcraft*, and of online video games in general, develop essential skills for the future, such as teamwork and the social competencies needed to face challenges and problems in everyday life. Therefore, these games are considered to prepare players for the labor market and academic spheres of the future. Rather than removing players from an educational environment, video games are presented as tools with great educational potential due to their interactive capacity and their connection to entertainment in society. (Quesada Bernaus, 2014)

Similarly, the study about Patrimonio Inmaterial de Navarra archive introduce a wide variety of digital and multimedia design resources that highlight knowledge of the cultural heritage of both, Navarra and Baja Navarra. The article analyzes digital storytelling and transmedia communication methodologies, which allow for establishing connections with target audiences through the analysis of their profiles, environments, and contexts. This proposal explores intangible heritage and develops it through the interactive tool Scratch, thus promoting active participation and meaningful learning. (Rubio-Navarro, 2016).

On the other hand, at the national level, Muñoz Pizarro's (2019) initiative, developed by Universidad del Azuay, stands out. It proposes the use of video games as a pedagogical tool for historical learning. One of his most representative projects is *Hijos de Killa*, based on the traditional story *Las hijas de la Guacamaya* (The Daughters of the Guacamaya). This video game recreates the period of the Inca conquest over the Cañari, offering an innovative approach to the study of culture through mobile devices, both in school and extracurricular contexts.

Along the same research topic, the Universidad de las Américas developed the project *Diseño y desarrollo de videojuego 3D basado en la Leyenda de Cantuña*. This recreational proposal seeks to teach cultural aspects by recreating local traditions and legends. The game transports the player to a carefully designed colonial Quito, combining elements of survival horror with educational content. This innovative approach succeeds in sparking interest in cultural heritage while maintaining the engaging and entertaining qualities of commercial video games. (Bahamonde Gómez, 2016)

Video game development in Latin America is experiencing significant growth, garnering international recognition and institutional support, such as PlayStation's sponsorship program for the region. An emblematic case is the Ecuadorian company FreakyCreations, which seeks to

position the country in the global industry through its game *To Leave*, an innovative proposal that explores the human condition from philosophical and psychological perspectives. This title, presented at E3, the industry's main convention, stands out for its unconventional narrative that addresses contemporary social disorders, combining educational elements with profound intrapersonal reflection. Through an interactive experience, the game immerses the player in the stresses of modern life, presenting an existential journey toward the search for personal meaning, thus offering a comprehensive view of the human being. Its success demonstrates the potential of Latin American video games to address complex issues while maintaining commercial appeal. (IFCI, 2018).

The video game's development began after a visit by Sony representatives to the *Centro de Tecnologías e Información de la Escuela Politécnica del Litoral* (ESPOL). After evaluating the project prototype, they invited the team to participate in their incubation program. This initiative, designed to foster new talent and emerging franchises in the industry, helped consolidate the game's production. (Noticias ESPOL, 2018)

Currently, the video game *Capac Héroes*, winner of the IFCI 2023 competition, is currently available on the App Store and will soon be released on the Play Store for Android devices. Developed by Dany Oñate, this title immerses the player in an interactive journey through the pre-Hispanic civilizations of the Americas, where they play the role of a rocker who begins his adventure in the province of Carchi. Over ten years of meticulous design, the game incorporates progressive difficulty mechanics with jumps, puzzles, and combat, while the protagonist interacts with historical figures such as Atahualpa and deities like Kukulcán. The narrative unfolds through iconic settings: from a flight over the sacred condor Hanan Pacha to the Cotopaxi volcano, the Cueva de los Tayos, inhabited by Amazonian peoples, and a time portal that leads to the Mayan temple of Tikal. The climax takes the character to the Underworld, a dreamlike space ruled by Andean and Mesoamerican deities. The experience is enriched by a soundtrack that blends songs by Rock-ola Bacalao and other Ecuadorian rock artists, consolidating a playful approach that articulates historical education, regional mythology, and digital entertainment with remarkable originality. (IFCI, 2024).

Similarly, Valle et al. (2025) propose a video game-based learning model with heritage gastronomic content, specifically aimed at elementary school students. Their research demonstrates how these types of digital tools can serve as effective mechanisms for identity empowerment through the revaluation of culinary traditions, the acquisition of contextualized cultural knowledge, and the development of digital skills with a heritage sense. This proposal reinforces the pedagogical viability of using educational video games as bridges between intangible cultural heritage and new generations, particularly in formal school settings.

❖ **Multimedia and video games in teaching-learning processes**

The word multimedia refers to communication systems that allow the integration of various media such as images, static or moving, synthetic or real, analog or digital, sound and data processing, on a single platform, with interactivity being its fundamental characteristic (Morón & Aguilar, 1994). In the educational field, the incorporation of Information and Communication Technologies (ICT) transcends the instrumental use of technological tools, constituting a pedagogical framework for the construction of meaningful learning. This techno-didactic articulation has acquired growing social relevance, demonstrating that its adoption by the educational community substantially optimizes the teaching-learning processes (Pimentel, Zambrano, Mazzini, & Villamar, 2023). As Salaverría (2001) points out:

In any case, and pending the necessary linguistic clarification of this word by the RAE, the Latin etymological origin (“multi” – “numerous” and “media” plural of medium: “media”, “intermediaries”) gives clear clues to its essential meaning: multimedia is that which is expressed, transmitted or perceived through various media. (p. 384)

In video games field, these are conceptualized as digital gaming systems that require an electronic device for execution. This device, along with its operating system, constitutes what is technically known as a platform (Iglesias, 2016). This definition is complemented by the perspective of Gil Juárez (2013), who supports that:

Video games are computer programs designed for entertainment and fun that can be played on various platforms, such as game consoles, computers, and mobile phones. Over the course of more than 30 years of development, video games have incorporated the characteristics and capabilities of new technologies, such as the combination of several audiovisual languages in a single platform, interactivity, the ability to process information, and connectivity. All of this explores the possibilities of this new medium to offer highly valuable gaming experiences to its players. (pp. 11-12)

Latorre (2011) proposes a theoretical structure for video game classification based on three fundamental principles: the establishment of clear and consistent criteria, the minimization of overlap between categories, and the inclusion of complementary categorization patterns based on relevant criteria. His classification model integrates four key dimensions:

- ❖ Accommodation-Assimilation Dialectic: Analyzes the cognitive processes that the game stimulates in the player.
- ❖ Game Structure: Examines the formal architecture of the game system.
- ❖ Implicit Player Purpose: Studies the roles and behaviors intended by the design.

- ◆ **Dominant Mechanics:** Identifies the primary interaction systems that define the experience.

Contemporary video game theory establishes a fundamental distinction between those that incorporate narrative and those that lack it (Izquierdo, 2020). Non-narrative video games, such as sports or multiplayer games, focus exclusively on the immediate playful experience without seeking to generate deep emotional connections, thus fulfilling their recreational function. In contrast, narrative video games construct complex fictional universes where the player assumes the leading role, experiencing dramatic progression through decisions that affect the plot and generate emotional identification.

In educational field, video games have emerged as a relevant object of study due to their pedagogical potential, particularly their ability to combine playful elements with learning processes. As Etxeberría (1998) points out:

(...) Intelligence does not appear to suffer any type of deterioration due to the use of video games. On the contrary, it is concluded that playing video games favors the development of aspects of intelligence, especially those of a spatial nature. (...) Finally, it has been conclusively demonstrated that video games provide special help in the treatment and improvement of educational and therapeutic problems, both physical and psychological, as well as multiple uses in terms of training all kinds of skills. (p. 179)

According to López Niño (2017), video games are a contemporary communication medium as relevant as television, the press, cinema, or the internet, capable of providing entertainment and, with the right guidance, valuable learning opportunities. Psych pedagogical research has shown these interactive systems promote the development of key competencies: from psychomotor skills and creativity to higher cognitive abilities such as decision-making, critical analysis, and problem-solving, all within highly motivating environments. Although certain aspects of video games have been questioned, their educational benefits are undeniable, enhancing fundamental skills such as sustained attention, logical reasoning, deductive thinking, and digital literacy, all of which are crucial for the comprehensive development of the individual. Even content considered controversial can be transformed into valuable pedagogical resources when critically analyzed, allowing educators to encourage reflection on social and ethical values.

Video games have become a relevant educational instrument that requires a specific approach in the classroom. They promote project-based learning, fostering skills such as autonomy, organization, group management, goal setting, shared responsibility, and progress monitoring. Their pedagogical application focuses on problem-solving, encouraging students to develop research strategies and collaborative work. To be

effective in education, video games must align with curricular objectives; they are useful for fostering teamwork, developing problem-solving skills, and offering multiple perspectives on specific topics.

Video games are also valuable for transmitting knowledge through simulations, particularly in areas such as healthcare. For their effective educational implementation, it is essential to establish clear objectives for their use, given the wide variety of genres and applications available. Their pedagogical potential lies in the subtle integration of knowledge through well-designed game mechanics and meaningful user experiences, requiring innovative approaches that leverage strategies still underexplored in formal education. These tools not only foster cognitive and social development but also promote understanding of the world, language acquisition, creativity, and physical development. The concept of gamification has emerged precisely to transfer these playful mechanics to other contexts, increasing their appeal and capitalizing on the positive aspects of video games. Their educational application requires rigorous analysis of their impact, definition of pedagogical design criteria, interdisciplinary research, and overcoming the limitations inherent to local studies. The use of commercial video games offers additional advantages by reducing costs and taking advantage of their familiarity among students, while maintaining their educational value, especially to encourage collaborative learning. (López Raventós, 2016)

◆ Intangible Heritage, la Mama Negra

The Fiesta de la Mama Negra, also known as the Fiesta de la Capitanía, the Fiesta de la Santísima Tragedia, the Fiesta de la Trajería, and the Fiesta de la Virgen de la Merced, is the main devotional event in honor of the Virgen de las Mercedes, patron saint and protector of Latacunga. This two-sided celebration has two annual versions with distinct characteristics: the first, of a religious nature, takes place in September, organized by merchants from the main urban markets of Pichincha and La Merced on the 24th and 25th, and El Salto on the 27th and 28th, demonstrating the population's deep Catholic faith. The second version, in November, commemorates the Independence of Latacunga (November 11, 1820), under municipal coordination, acquiring a political and patriotic tone that mobilizes the productive sectors and civil organizations. This ceremonial duality, where the sacred and the profane converge, functions as a mechanism for reinforcing identity, synthesizing in its rituals the colonial religious foundation, the republican independence imagery, and contemporary sociocultural practices. According to the IFCI (s.f), this festival constitutes a key symbolic system for understanding Latacunga culture, where the durability of its ritual elements, through the faith/country syncretism, guarantees the intergenerational transmission of local identity.

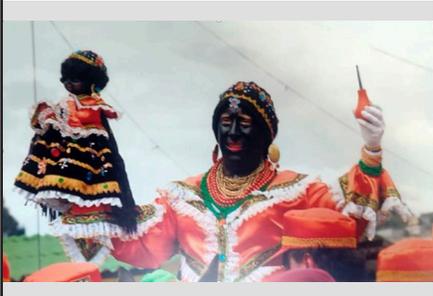
According to Schneider (2007), the mestizo population of Latacunga celebrates the Fiesta de la Mama Negra annually in two distinct versions:

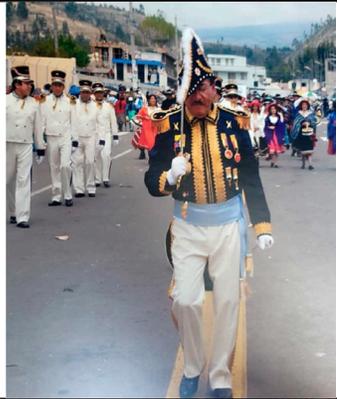
one in September, a religious celebration in honor of the Virgin of Mercedes, organized by local commercial guilds; and another in November, coinciding with the commemoration of the city's independence on November 11, 1820, coordinated by the municipal government. This cultural event, whose tradition is symbolically linked to the liberation processes of Afro-descendant communities during the colonial period, has turned Mama Negra into a representative emblem of Ecuadorian multiculturalism. As complemented by the official description of the character on the official website of the Mama Negra festival (Mama Negra, s.f.):

She is, without being so, the central character of this comparsa. Tradition holds that she is a Black woman, whom the Virgin of Mercy freed from slavery. The person who assumes this role is a male, a devotee who so desires or is designated by the organizers. She wears a long, dark-colored skirt with two or three lace trims at the bottom, a brightly colored blouse, and covers her back with colorful shawls, which she continually changes throughout the procession. Her face is covered by a black wooden mask. In her right hand, she carries a "chisguete" filled with a white liquid, representing breast milk, which she constantly throws at those present and curious on-lookers. In her other hand, she carries a small black doll named Baltasara, the youngest daughter of the Black Mama. She rides on an equally decorated horse and is "pulled and led" by Black grooms. She carries two children at her sides, their faces painted black, inside bags called "alforjas." With his retinue of black loeros, he is the last character to pay homage to the Virgin of Mercedes and receive the blessing of the captaincy. He enters dancing on his horse, raising his arms and hands to the sky, alternately to the rhythm of the cheerful music that accompanies him.

The heritage celebration has been described and documented by authors such as Sandoval (2009) and Andrade, Cárate, and Freire (2020). Their studies led to a description of its main characters in the following table:

Table 1
Main characters of Mama Negra

Character	Description	Clothing Features	Image
La Mama Negra	Black woman freed from slavery by the Virgin of Mercy. Represented by a devout or designated male. She rides an ornate horse.	Long dark skirt with lace, striking blouse, colorful changing shawls, black wooden mask, waterspout with white liquid, black doll (Baltasara), decorated horse.	

<p>El Capitán</p>	<p>Main character and "Prioste Mayor", symbolizes the Spanish "corregidor" and is considered the lover of La Mama Negra.</p>	<p>Suit with military elements, shirt and tie, suit with epaulettes and sash, large crescent-shaped beret, saber, chainmail mask, headscarf.</p>	
<p>El Abanderado</p>	<p>It symbolizes love for the earth and its fellow human beings. It carries a seven-colored checkered flag to "sweep away" the sins of the faithful.</p>	<p>Military attire: white shirt, tie, dark suit with epaulettes and sash, headscarf, cap, chainmail mask. Accompanied by two escorts in similar attire.</p>	
<p>El Rey Moro</p>	<p>Represented by a child, he symbolizes a character of Moorish influence.</p>	<p>Plain trousers and blouse, a striking cape with precious stones, a tall oval crown with fabric and precious stones, and a hood similar to pre-Columbian orejones. He rides a horse covered in a cape, accompanied by black loeros.</p>	

Source: Own elaboration

Research Methodology

The research was conducted using a mixed qualitative-quantitative methodological approach (Hernández-Sampieri & Mendoza Torres, 2018), structured in two sequential phases. The first exploratory phase collected qualitative data through interviews with cultural managers and participants in institutional courses.

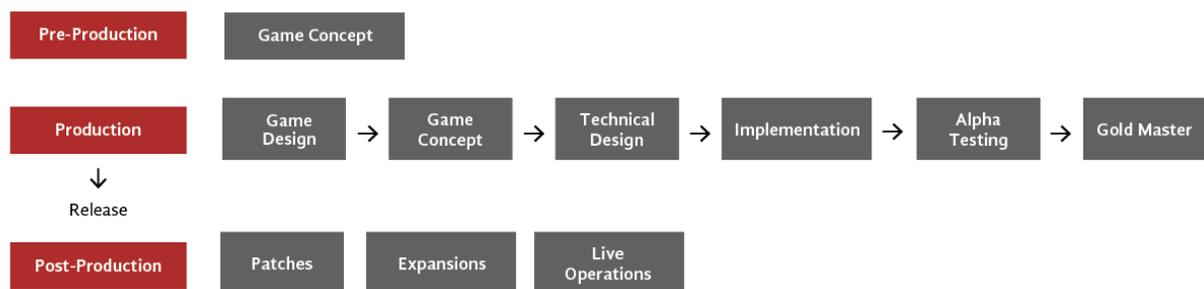
In the second phase, these inputs enabled the design of a beta version of an educational video game, which was tested and validated through focus

groups during the vacation courses offered by the Cotopaxi House of Culture in July 2023, enabling iterative adjustments based on user feedback.

The video game design and programming were based on the methodological framework proposed by Manrubia Pereira (2014), which establishes a systematic process for coordinating the specifics of video game design with its production phases. This model allows for the analysis of how the characteristic elements of a video game its mechanics, narrative, and technical components, influence development decisions during each production stage, thus ensuring comprehensive coherence between the conceptual design and its technical implementation.

The development of the beta version of the video game was carried out over a period of 16 weeks by two performers, a designer and a programmer, within the Unity generation engine.

Figure 1
Video game production process



Source: Prepared by the authors, adapted from Manrubia Pereira (2014)

The general concept of the video game was outlined, following a series of steps for its realization, so that each one follows a logical and coherent sequence for subsequent phases. Generally, a brainstorming methodology is implemented, in which thoughts, sketches, and initial ideas are collected with the goal of giving the video game's development a solid start. The pre-production process can be summarized in the table:

Table 2
Video Game Pre-Production Elements

Category	Description
Genre	Action – Platforms you can control a character to jump and move around the levels.

Story	The characters participating in La Mama Negra are represented as haunted figures that threaten the safety of the residents, creating various obstacles throughout the level.
Technical considerations	<ul style="list-style-type: none"> ◆ Constant difficulty, basic level ◆ Single player ◆ Offline ◆ Physical controls
Esthetic	Two-dimensional side-scrolling pixel art.
Development engine	Unity
Programming	Visual Basic
Platform	PC. Mechanics with keyboard

Source: Own elaboration

Similarly, depending on the game development engine, programming language used and other technical considerations, minimum requirements are necessary for the video game to run, as detailed in the following table:

Table 3
System Requirements

For PC	Minimum requirements	Recommended requirements
Operating system	WINDOWS XP,7,8,8.1,10 (04-BIT Required)	WINDOWS XP,7,8,8.1,10 (04-BIT Required)
Processor	Intel Core i 7 Ghe	Intel Core i5-4460 2.70Gh7 AMD EX-6300 or Superior
Memory	512 MB - RAM	2 GB de RAM
Graphics	NVIDIA GTX 760	NVIDIA GTX 760 AMD Radeo R7 260x with 2 GB Video RAM
Direct X	Version 11	Version 11

Source: Own elaboration

Qualitative data collection was obtained during the month of July 2024, during the Cotopaxi Cultural Center's (CCE) vacation courses. Six individual semi-structured interviews were conducted. The purpose of the interviews was to understand the perspectives of CCE course instructors, video game technology developers, and parents on the relevance of video games for learning cultural content.

Qualitative data collection took place during July 2024, as part of the vacation courses organized by the Ecuadorian Cultural Center of Cotopaxi (CCE). In this context, six individual semi-structured interviews were conducted, each with five to six questions. The purpose was to understand the perceptions of course instructors, technology developers involved in video game creation, and parents regarding the relevance of video games as a tool for learning cultural content. The information obtained allowed us to explore the degree of acceptance, expectations, and educational potential that these digital resources offer in non-formal training spaces.

The interviews were designed based on the participants' profiles. Teachers of the CCE vacation courses were asked about the topics covered in relation to culture and technology, as well as about the potential of video games as a medium for transmitting and disseminating knowledge. Technology developers involved in video game creation were asked questions focused on the development process of educational video games and the adaptation of cultural content to this format. Finally, parents were asked about their perceptions of the use of video games as a learning tool and their opinions on the inclusion of cultural themes in such content.

The participants in the qualitative data collection conducted at the Cotopaxi CCE are detailed in the following table:

Table 4
Qualitative interviews participants

N	Interviewee	Function	Observations
1	Marla Proaño	Teachers from the Casa de la Cultura de Cotopaxi.	Teacher in charge of the vacation courses at Casa de la Cultura de Cotopaxi, specialist in cultural issues
2	Ramiro Vásquez	Teachers from the Casa de la Cultura de Cotopaxi.	Teacher in charge of the vacation courses at Casa de la Cultura de Cotopaxi, specialist in technology issues.
3	Daniel Gutiérrez	Video game developer	University professor of multimedia production.

4	Francisco Cáceres	Video game developer	Speaker on the topic of video games and culture, enthusiast of Ecuadorian literature, myths and legends.
5	Jose Balladares	Representative (parents) of the course participants	Beneficiary of the courses offered by Casa de la Cultura de Cotopaxi.
6	Miguel Winderlen,	Representative (parents) of the course participants	Beneficiary of the courses offered by Casa de la Cultura de Cotopaxi.

Source: Own elaboration

Results From the results of the interviews conducted with people involved in the management of technology courses taught by the Cotopaxi CCE, several relevant aspects can be highlighted:

Table 5
Interview Results

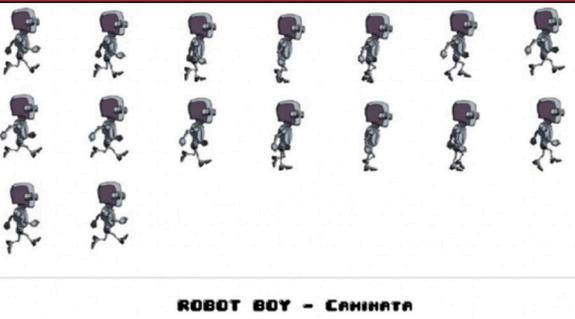
Interviewee	Main result
Marla Proaño y Ramiro Vásquez, Teachers from the Casa de la Cultura de Cotopaxi	The offering of courses or training related to the use of technology is attractive to children, young people, and parents. Teachers also positively value the inclusion of local cultural content as a central focus in video game development, recognizing the educational potential of this tool beyond entertainment. However, those interviewed expressed concern about the lack of funding for new technologies. This limitation not only reduces course participation but also jeopardizes the continuity of valuable initiatives for cultural and technological training in non-formal settings.
Daniel Gutiérrez y Francisco Cáceres, Video game developers	According to Gutiérrez, the incorporation of cultural narratives in the creation of scripts inspired by popular Ecuadorian festivals is appropriate and relevant within educational processes. This strategy allows for connection with local identities and promotes learning from meaningful contexts. Along these lines, video game developers agree that such adaptation could help counteract the influence of foreign customs, while making local stories and legends more attractive and relatable to young people. For his part, Cáceres has presented his conference entitled "Video Games and Culture" in various venues, where he highlights the potential of video games as comprehensive learning and entertainment tools, combining narrative, visual design, sound, and creativity in a single medium.

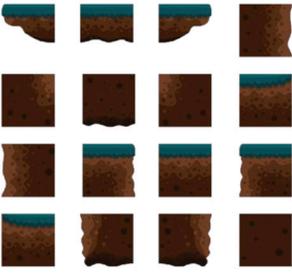
<p>Jose Balladares y Miguel Winderlen, Representative (parents) of the course participants</p>	<p>For student parents, video games can contribute to learning, although they remain skeptical due to their leisure nature and their reputation as empty entertainment. However, they expressed interest in combining real-life stories with fantasy elements as a way to combat the monotony of traditional approaches. Similarly, the parents interviewed agreed that the most important thing is to have a captivating and engaging story, regardless of the medium used to convey it.</p>
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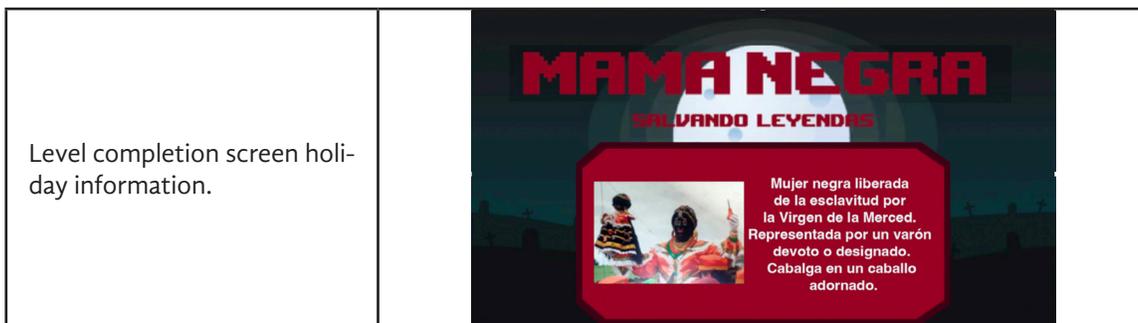
Fuente: Elaboración propia.

Using the information obtained through the interviews and the compilation of documentary information on the heritage celebration, we proceeded to design elements for the video game, as detailed in the graphic.

Table 6
Graphic elements of the video game

Element	Graphic
<p>Character: Robot Boy. Generic droid for level traversal, part of Unity's assets.</p>	 <p>ROBOT BOY - CAMINATA</p>
<p>Scenario: generic backgrounds used in game interfaces, elements belonging to places in the city of Latacunga.</p>	 <p>ESCENARIO</p>

<p>For the stage, terrain segments designed according to the video game concept were used to creatively implement the level and edit it in creation mode.</p>	 <p>ESCENARIO- COMPOSICIÓN</p>
<p>Within the scenario, different types of objects were implemented for the interaction mechanics.</p>	 <p>ESCENARIO- COMPLEMENTOS E INTERACCIONES</p>
<p>For the video game, an icon was presented with the color scheme of the mask of the main character of the La Mama Negra festival.</p>	 <p>ICONO VIDEOJUEGO</p>
<p>Home screen with the game's interaction buttons.</p>	
<p>Screen with instructions for controlling the character and game mechanics.</p>	



Level completion screen holiday information.

Source: Own elaboration

The educational video game prototype implements side-scrolling mechanics with environmental interaction, inspired by classic 8-bit platformer design, also known as pixel art (e.g., Super Mario Bros.). Each level culminates with an educational interface that presents a visual representation of traditional Mama Negra characters, accompanied by contextual information about their cultural significance. In this way, the game serves a dual function: both recreational and educational, combining entertainment dynamics with the transmission of heritage content. This structure seeks to reinforce learning by alternating between gamified action and narrative exposition, generating a meaningful experience for the player that fosters interest in local traditions.

After accomplishing the design and production of the video game, a pilot test was implemented with 40 students (aged 13 to 16) during the institution's summer courses. Subsequently, a validation instrument was applied that evaluated five key dimensions: (1) thematic adequacy, (2) content rigor, (3) interface usability, (4) gameplay quality, and (5) educational relevance, with a rating from 1 to 5, the results of which are presented in Table 7:

Tabla 7
Evaluación y calificación del videojuego cultural

N	Criteria	Average rating
1	Thematic appropriateness	10
2	Rigor of content	9
3	Interface usability	10
4	Gameplay quality	9

5	Educational relevance	9
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Source: Own elaboration

Furthermore, the results obtained from the evaluation of the prototype through the focus group revealed the following quantitative findings:

- ❖ 100% of participants stated they "strongly agree" with the inclusion of the celebration of La Mama Negra in the video game, highlighting its effectiveness in learning about the origins and significance of this heritage festival.
- ❖ 90% of users considered the content on the constituent elements of La Mama Negra to be "highly appropriate," validating its potential as an educational resource.
- ❖ 95% of evaluators rated the interface elements, characters, and game mechanics positively ("strongly agree"), while the remaining 5% were in the "agree" category, with no negative evaluations recorded.
- ❖ All participants (100%) indicated they would recommend the video game to their acquaintances, demonstrating a high level of acceptance of the educational and recreational proposal.
- ❖ The entire group (100%) expressed interest in learning about other manifestations of Ecuador's intangible cultural heritage through this educational video game format.

❖ Discussion The favorable results obtained, both in the qualitative phase with cultural professionals and developers and in the focus group evaluation with users, coincide with the postulates of Etxeberría (1998), who highlights the potential of video games to stimulate cognitive development, improve learning processes, and transform conventional educational methods. This coincidence between empirical evidence and theoretical foundation supports the effectiveness of video games as a pedagogical tool in the transmission and preservation of intangible cultural heritage.

The results of the experimental group on the acquisition of content related to the celebration of Mama Negra, specifically regarding sustained attention and meaningful learning, confirm López Niño's (2017) postulates regarding the pedagogical value of interactive resources. The data obtained demonstrate that the creative design of the video game not only enhanced intrinsic motivation through its interactivity but also favored the development of social skills among participants. This dual

effectiveness (cognitive and socio-affective) coincides with theoretical evidence that indicates how well-structured digital play environments can transform traditional learning processes by combining the assimilation of complex cultural content, the stimulation of collaborative skills, and the creation of memorable educational experiences. The correlation between our empirical findings and the theoretical framework validates the potential of this tool for the preservation of intangible cultural heritage through innovative strategies.

Regarding the identity-based nature of Mama Negra, conceptualized by Schneider (2007) as a central element of Latacunga culture, study participants expressed a positive assessment of the inclusion of this festival as a thematic focus of the educational video game. This favorable perception was evident both in the interviews with key informants and in the focus group sessions, where participants demonstrated a significant increase in their knowledge of the celebration's constituent elements and a greater emotional identification with this cultural heritage. The results confirm that the digital mediation of heritage content can effectively enhance processes of identity appropriation and intergenerational cultural transmission.

Conclusions

The evaluation highlights several aspects of the video game that could be improved. The plan is to replace the generic player avatar with a character representative of the local culture, as well as replace the standard backgrounds and visual elements with custom graphics that reflect the urban and rural environments of the city of Latacunga. These changes seek to strengthen the video game's graphics, achieve greater identification with the locality, reflect symbolic elements of the Mama Negra celebration and the city, and thus complement the project's educational and heritage purposes.

It is essential to highlight the central role of users in the design and development of educational video games, where the integration of learning, culture, and gamified technology allows for the creation of engaging products for diverse audiences, with a particular emphasis on children and young people. Qualitative research conducted through interviews revealed its methodological value in understanding the dynamics of participation in the Casa de la Cultura's training programs, identifying the cultural content requested by users, and establishing key guidelines for the design of educational video games focused on the real needs of their recipients. These findings underscore the importance of adopting participatory approaches in the development of educational game tools, thus ensuring their cultural relevance and pedagogical effectiveness.

The diagnostic phase of qualitative research led to the development of a digital tool based on Ecuador's intangible cultural heritage, specifically

the celebration of Mama Negra. The subsequent evaluation of this multimedia application, conducted through qualitative focus groups, confirmed the effectiveness of video games as innovative educational resources. The results demonstrate their relevance in complementing traditional curricular content, strengthening knowledge about local cultural expressions, and reinforcing heritage identity in children and young people. This empirical validation supports the potential of playful technologies for safeguarding and transmitting intangible heritage at the national level. 

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