

Educational Virtual Reality Games with a Decolonial Focus: An Ongoing Experience

Lucas Medeiros de Araújo Vale¹, Arlete dos Santos Petry²

¹Graduate Program in Innovation in Educational Technologies – Federal University of Rio Grande do Norte (UFRN) – Natal, RN – Brazil

²Graduate Program in Innovation in Educational Technologies – Federal University of Rio Grande do Norte (UFRN) – Natal, RN – Brazil

lucas.vale.103@ufrn.edu.br, arlete.petry@ufrn.br

Abstract. *This paper presents the ongoing development of “Guardião do Seridó”, a narrative-driven Virtual Reality game for History education. Inspired by foundation myths from northeastern Brazil and Otxukayana cosmologies, the game proposes a decolonial reimagining of historical narratives by placing the player in the role of an indigenous character defending their territory. The exploratory research, grounded in Design Science Research, includes the creation of a Game Design Document (GDD), an AI-assisted storyboard, and an initial VR prototype. Preliminary results suggest the potential of immersive games to amplify silenced voices and promote culturally responsive educational practices.*

Keywords: *Virtual Reality. History Education. Educational Games. Decolonial Epistemologies. Indigenous Peoples.*

1. Introduction

In the Seridó region of the state of Rio Grande do Norte, Brazil, a popular narrative circulates about the founding of the city of Caicó: a cowboy, desperate while being chased by a furious bull—possessed by an Indigenous entity—allegedly made a promise to Saint Anne to escape death. After having his plea granted, he built a chapel at the site of the escape, giving rise to the city (BORGES, 2017). This story, still alive in the collective memory, reflects a colonizing spiritual logic in which Indigenous peoples are symbolized as a threat, while the European Christian assumes the role of founding hero.

The discomfort with this type of narrative gave rise to the idea for the game *Guardião do Seridó* (Guardian of the Seridó), an educational Virtual Reality experience that seeks to retell this origin story from another perspective. Rather than reaffirming the Christian civilizing discourse, the game invites the player to assume the role of an Otxukayana, a member of an Indigenous people summoned by Taúba—a deity of the Otxukayana—to protect the territory from colonial invasion. Instead of banishing the bull, the proposal is to ritually invoke it as a symbol of resistance. The inversion is therefore not only narrative but epistemological: it aims to value other ways of knowing, feeling, and inhabiting the world, standing against the silencing imposed by colonization.

This proposal aligns with both legal and pedagogical frameworks within the Brazilian educational context. Law No. 11.645/2008 mandates the teaching of Indigenous and Afro-Brazilian history and culture at all levels of basic education, recognizing the central role of these groups in the formation of the country. In this context, the following research question emerges: How can a narrative-driven Virtual Reality game be developed to value the intangible heritage of Indigenous peoples and promote the teaching of History through a decolonial approach?

This article aims to present the design process of the game *Guardião do Seridó*, with an emphasis on the development of the Game Design Document (GDD), the construction of the storyboard, and the creation of an initial VR prototype. Although the game is still under development, the materials produced so far offer relevant contributions to the fields of education and emerging technologies. The article is organized into four sections: the theoretical framework (Section 2), the methodology (Section 3), the partial results (Section 4), and the final considerations (Section 5).

2. Background and Theoretical Foundations

The use of digital games in education has gained prominence due to their potential to foster meaningful, critical, and affective learning. In History education, this potential is amplified by the ability to engage students in narrative, sensory, and polysemic experiences that articulate different temporalities, emotions, and worldviews. In this context, Virtual Reality (VR)-based games can expand this process by placing the player within three-dimensional environments that evoke historical empathy and emotional connections with the content.

For the development of this game, the Game Design Document (GDD) was used as a structuring tool. According to Lemes (2009), the GDD helps organize the narrative, technical, and pedagogical aspects of a game, serving as a guide throughout the entire production process. In the case of *Guardião do Seridó*, the GDD was structured into sections that integrate a decolonial narrative, VR mechanics, aesthetics inspired by the caatinga biome, accessibility, gameplay, and visual resources. The design also draws on Motta and Trigueiro (2013), who advocate for documents that allow the designer to "mentally play" through the experience.

However, beyond technical structure, games like this require an epistemic repositioning. The epistemologies of the South (Walsh, 2017) call for a break from Western hegemony and the valorization of marginalized knowledge systems. In History education, this implies pedagogical practices that confront the colonial curriculum and give voice to historically silenced subjects, such as Indigenous peoples.

To ground the symbolic universe of the game, the work also revisited the studies of Macedo (2007), who analyzed the history of the Otxukayana—an Indigenous people from the Seridó region—based on colonial sources. Although marked by distortions and silences, such sources allow glimpses into the cosmology, resistance, and agency of these peoples, whose practices involved astronomy, rituals, agriculture, and strategies to escape colonial domination.

3. Methodology

This study is characterized as applied research with a qualitative and exploratory nature, aimed at the development of an educational artifact in Virtual Reality. The objective is to create a digital game that combines theoretical foundations, pedagogical intentionality, and practical applicability, contributing to the appreciation of Indigenous narratives in History education.

The methodological approach is based on the first two cycles of Design Science Research (DSR), as proposed by Hevner et al. (2004): the relevance cycle, which guides the identification of the problem and the definition of requirements; and the design cycle, focused on the iterative conception and development of the artifact. The rigor cycle, centered on empirical evaluation, will be conducted in future stages.

Three main deliverables have been developed so far: (1) Game Design Document (GDD) – systematizes the narrative, technical, aesthetic, and pedagogical aspects of the game *Guardião do Seridó*, with a focus on structuring its educational proposal and decolonial narrative; (2) Storyboard – created with support from artificial intelligence, visually represents the initial scenes, assisting in the definition of setting, flow, and interactions; (3) Initial VR prototype – developed using the Unity engine with compatibility for the Meta Quest headset, based on 3D assets obtained from platforms such as Sketchfab.

As the project is currently in the pre-production phase, the prototypes have not yet been tested with users. Evaluations of usability, accessibility, and pedagogical impact, as well as research ethics protocols, are planned for future stages of the project.

4. Preliminary Results

4.1 Game Design Document (GDD)

The GDD was the main technical output developed thus far, serving to systematize the conceptual, technical, narrative, aesthetic, and pedagogical aspects of the game *Guardião do Seridó*. Through this document, we designed a narrative Virtual Reality experience set along the banks of the Seridó River, from the perspective of the native peoples. In this context, the player takes on the role of a young Otxukayana, summoned by their ancestors to carry out a ritual of spiritual resistance.

The storyline follows a three-act structure: (1) spiritual calling, (2) ritual journey, and (3) reconnection with ancestry. The gameplay mechanics include teleportation-based movement, symbolic item collection, ritual dancing, and the invocation of a deity who transforms into a bull. We chose to adopt a low-poly modeling aesthetic, ritualistic sound design, and a minimalist interface tailored to VR immersion.

Moreover, we sought to align the game with the competencies outlined in Brazil's National Common Curricular Base (BNCC), with an emphasis on valuing Indigenous cultures, fostering critical perspectives on colonization, and promoting a sensitive historical consciousness. The GDD also includes a detailed description of gameplay and

visual references to guide the 3D modeling of symbolic elements from the Seridó region.

4.2 Storyboard

The narrative and interactive structure of the game was organized into a flowchart that represents the main stages of the immersive journey, from the introduction to the ritualistic climax. Based on this structure, a storyboard was developed with support from artificial intelligence, visually mapping key scenes of the game, settings, and symbolic actions.

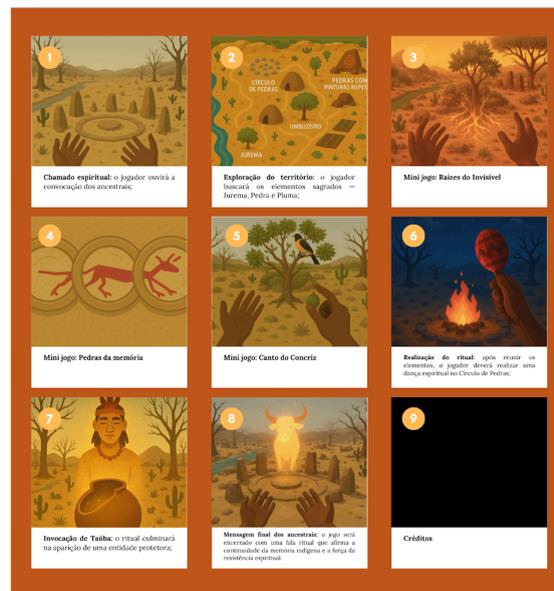
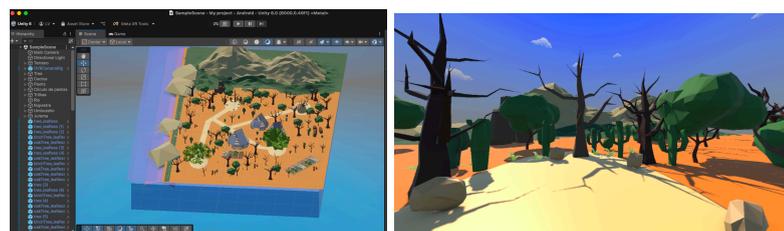


Figure 1. Storyboard

The construction of the storyboard was based on data about the caatinga biome, maps of Caicó, and photographs of the Seridó River banks. Although the AI-generated models had limitations in representing the biome accurately, the material produced supported aesthetic decisions and contributed to the narrative organization of the project.

4.3 Prototype

The initial prototype was developed in Unity 3D, with support for Meta Quest. Although not yet fully interactive, it recreates a navigable environment that represents, on a reduced scale, the Seridó territory. Elements such as dry trees, xique-xique cacti, rocks, and a dynamic sky were positioned based on the GDD.



Figures 2 and 3. Prototype developed in Unity 3D (2025).

Three central objects—the jurema tree, the ancestral stone, and the umbuzeiro tree—were placed in the environment, allowing for an assessment of their placement and aesthetic impact. The prototype served as a foundation for adjustments in scale, lighting, and spatial organization, guiding the next stages of technical and narrative development.

5. Final Considerations

This article presented the design process of the game *Guardião do Seridó*, aimed at History education with a focus on valuing Indigenous cosmologies through Virtual Reality. Based on the development of the GDD, the creation of a storyboard with AI support, and the construction of an exploratory prototype, the elements that underpin the game's narrative, aesthetic, technical, and pedagogical proposal were systematized. The project demonstrated the feasibility of integrating game design with principles of ethno-racial justice, breaking away from stereotypical representations and promoting plural, educational experiences rooted in the territory and traditions of the Otxukayana people. Among the limitations, the absence of user testing and the need for a deeper dialogue with experts stand out. As next steps, the project intends to advance the game's interactive development, carry out evaluation cycles, and explore its application in school contexts, contributing to more inclusive, critical, and decolonial pedagogical practices.

7. References

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