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PIXEL ADVENTURE: CULTURAL AND GASTRONOMIC EXPLORATION OF MATO GROSSO DO SUL THROUGH A DIGITAL GAME

PIXEL ADVENTURE: EXPLORAÇÃO CULTURAL E GASTRONÔMICA DO MATO GROSSO DO SUL ATRAVÉS DE UM JOGO DIGITAL

PIXEL ADVENTURE: EXPLORACIÓN CULTURAL Y GASTRONÓMICA DE MATO GROSSO DO SUL A TRAVÉS DE UN JUEGO DIGITAL

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Abstract: This article presents the development and cultural-pedagogical proposal of the digital game "*Pixel Adventure*: A Journey through Mato Grosso do Sul". It is a *pixel art* [2]cooking simulator that promotes an interactive and relaxing experience based on exploring the regions of the state and its cultural and gastronomic expressions. The game combines tourism, narrative, user experience design, and heritage education, highlighting typical recipes and tourist attractions. The adopted methodology includes historical and cultural research, user-centered

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[2] *Pixel art* is a style of digital art based on the creation of images formed by small colored blocks (pixels), manually arranged to compose characters, objects, and scenarios. This type of aesthetic is reminiscent of classic games from the 1980s and 1990s, and is widely used in contemporary independent game design because it combines visual simplicity, expressiveness, and low production cost (PAGAN, 2020).

design, and references from well-known simulation games. The results point to the construction of an accessible, educational, and engaging digital product. The discussion considers the game's potential as a tool to enhance intangible heritage and as a didactic resource.
Keywords: Regional culture; Brazilian cuisine; Digital games.

Resumo: O presente artigo apresenta o desenvolvimento e a proposta pedagógica e cultural do jogo digital "*Pixel Adventure*: Uma Jornada pelo Mato Grosso do Sul". Trata-se de um simulador de culinária em estilo *pixel art*[3] que promove uma experiência interativa e relaxante, baseada na exploração das regiões do estado e suas manifestações culturais e gastronômicas. O jogo combina turismo, narrativa, design de experiência e educação patrimonial, destacando receitas típicas e pontos turísticos. A metodologia adotada contempla pesquisa histórica e cultural, design centrado no usuário e referências consolidadas em jogos de simulação. Os resultados apontam para a construção de um produto digital acessível, educativo e envolvente. A discussão considera as potencialidades do jogo como instrumento para valorização do patrimônio imaterial e como recurso didático.
Palavras-chave: Cultura regional; Gastronomia brasileira; Jogos digitais.

Resumen: Este artículo presenta el desarrollo y la propuesta pedagógica y cultural del juego digital "*Pixel Adventure*: Una travesía por Mato Grosso do Sul". Se trata de un simulador culinario en estilo pixel art que promueve una experiencia interactiva y relajante, basada en la exploración de las regiones del estado y sus manifestaciones culturales y gastronómicas. El juego combina turismo, narrativa, diseño centrado en el usuario y educación patrimonial, destacando recetas típicas y atracciones turísticas. La metodología adoptada contempla investigación histórica y cultural, diseño centrado en el usuario y referencias consolidadas en juegos de simulación. Los resultados indican la construcción de un producto digital accesible, educativo y envolvente. La discusión considera el potencial del juego como instrumento de valorización del patrimonio inmaterial y como recurso didáctico.
Palabras clave: Cultura regional; gastronomía brasileña; videojuegos.

INTRODUCTION

Digital games have played a significant role as entertainment tools, but they are also steadily emerging as pedagogical and cultural resources. In Brazil, this potential is particularly promising given the regional diversity and richness of its intangible heritage (SALEN; ZIMMERMAN, 2003; MORALES, 2020). This article presents the game " *Pixel Adventure* : A Journey through Mato Grosso do Sul," a cooking simulator that combines elements of tourism, history, culture, and gastronomy, providing the player with a playful, educational, and immersive experience.

pixel art aesthetics and an accessible narrative structure, the game allows the player to

[3] *Pixel art* é um estilo de arte digital baseado na criação de imagens formadas por pequenos blocos coloridos (pixels), organizados manualmente para compor personagens, objetos e cenários. Esse tipo de estética remete aos jogos clássicos das décadas de 1980 e 1990, sendo amplamente utilizado no design contemporâneo de jogos independentes por combinar simplicidade visual, expressividade e baixo custo de produção (PAGAN, 2020).

explore various cities in the state of Mato Grosso do Sul, discovering their tourist attractions and typical dishes. By taking on the role of a young chef in search of culinary identity, the player interacts with different locations, their histories and flavors, creating a journey of self-discovery and appreciation of regional culture (PAGAN, 2020; ABREU, 2021).

Pixel Adventure " proposal is based on the idea that digital games can function as cultural mediators, encouraging meaningful learning, valuing diversity, and strengthening identity (WILSON, 2021; NIELSEN, 2022). Instead of imposing rigid goals, the game offers freedom of exploration and choice, respecting the pace and style of each player, thus becoming an inclusive and potentially educational experience (NORMAN, 2019).

This introduction contextualizes the relevance of game research and development as instruments for cultural dissemination and proposes a reflection on the use of interactive technologies to promote knowledge of Brazilian intangible heritage, focusing on culinary traditions and sociocultural characteristics of Mato Grosso do Sul (CARROLL, 2019).

MATERIALS AND METHODS

The methodology employed in the development of the game " *Pixel Adventure* " was structured around three main pillars: (1) historical and cultural research; (2) user-centered design; and (3) iterative development based on established game references. This approach ensured the construction of a digital product consistent with its educational, cultural, and entertainment objectives.

The first stage involved in-depth research into the history, culture, geography, and gastronomy of the state of Mato Grosso do Sul. Searches were conducted in bibliographic sources, historical records, and official tourism websites, with the aim of mapping the main cities, tourist attractions, and typical dishes. This research underpinned the definition of the content presented in the game and allowed the selection of elements representative of regional identity (SANTOS et al., 2024).

In the second stage, a user-centered design approach was adopted, in accordance with the guidelines of the ISO 9241-210 standard (2019). This implied thinking about the interface, controls, and game progression focusing on the player experience, prioritizing accessibility, intuitiveness, and immersion. Usability principles (KRUG, 2018; NIELSEN, 2022) and digital accessibility principles (MORALES, 2020) were applied, aiming to reach audiences of different age groups and levels of familiarity with games.

The third stage consisted of the conception and technical implementation of the game,

using the *Unity engine and specific* [4]*pixel* art tools , such as *Aseprite* . This phase included the creation of concept art, *sprites* [5], mechanics, and the graphical interface. The team based their work on reference games such as " *Venba* ", " *Stardew Valley* ", " *Cook, Serve, Delicious* !", and " *Overcooked* ", seeking inspiration in how to integrate cooking, narrative, and gameplay (ABREU, 2021; PAGAN, 2020).

Additionally, an iterative process with continuous testing and refinement was adopted. Prototypes were evaluated by peers and by a group of 52 external users, aged between 15 and 45 years, including students and teachers from the Federal Institute of Education, Science and Technology of Mato Grosso do Sul. The selection was based on convenience, considering different levels of familiarity with digital games. Qualitative *feedback* was obtained through open-ended questionnaires, addressing visual clarity, fluidity of experience, and engagement with the content. Although the prototype prioritized cognitive and visual accessibility, the proposal did not, at this stage, encompass complete universal design and should be expanded in the future to include users with specific educational needs. This strategy allowed for the progressive improvement of the game, maintaining alignment with the initial objectives of the project.

In this way, the methodology combined theoretical research, participatory design practices, and sound technical development, resulting in a digital game aligned with the principles of accessibility, cultural appreciation, and educational potential.

RESULTS

This literature review aims to contextualize and theoretically ground the " *Pixel Adventure* " game proposal within the fields of digital games, heritage education, user-centered design, and *pixel art aesthetics* . The main concepts and authors that guided the development of the project are discussed below.

Digital Games and Education

Digital games have been widely explored as teaching and learning tools. Salen and Zimmerman (2003) argue that games constitute complex systems that operate with rules, objectives, and interactions that encourage strategic thinking and problem-solving. When

[4] The *Unity engine* is a cross-platform game development platform that integrates tools for creating graphics, physics, sound, and interactions, allowing the development of 2D, 3D, and virtual reality experiences. It is one of the most widely used *game engines* in the world due to its versatility, user-friendly interface, and compatibility with various platforms (ABREU, 2021).
[5] *Sprites* are two-dimensional graphic elements (such as characters, objects, and icons) used in digital games. They make up the moving and interactive images that appear on the screen, being essential for visually representing the game components in a lightweight and efficient way (KRUG, 2018; PAGAN, 2020).

applied to educational contexts, they offer possibilities for meaningful learning, especially through gamification and the simulation of experiences (ABREU, 2021).

Furthermore, *game flow* refers to the psychological state of immersion and continuous engagement that occurs when the player experiences an appropriate balance between challenge and skill during interaction with the game. The concept is derived from Flow Theory , proposed by Csikszentmihalyi (2004), and applied to digital game design by authors such as Sweetser and Wyeth (2005).

In a game with good *flow*, the player feels pleasure and intrinsic motivation to continue playing, as the tasks are challenging enough to generate interest, but not so difficult as to cause frustration. Elements such as immediate feedback, clear goals, control over actions, and a sense of progress contribute to *game flow*, making the experience more engaging and meaningful.

Thus, the structure of the *Pixel Adventure game* directly aligns with the principles of *game flow*, which seeks to balance the level of challenge and the player's skills (Csikszentmihalyi, 2004; Sweetser & Wyeth, 2005), promoting an immersive and enjoyable experience. This concept is fundamental to the design of educational games, as it allows the creation of experiences that keep players motivated and focused.

Heritage Education and Regional Culture

Heritage education aims to promote the appreciation of a community's cultural and intangible heritage. According to Santos et al. (2024), digital games can act as mediators in this process by allowing users to interact playfully with symbols, stories, and cultural practices. The simulation of typical recipes, for example, contributes to the recovery and dissemination of culinary knowledge that makes up the identity of a people.

Morales (2020) reinforces that games with cultural themes promote understanding of diversity and strengthen identity ties, especially when they integrate visual, sound, and narrative aspects representative of local cultures.

User-Centered Design and Usability

User-centered design, as advocated by the ISO 9241-210 standard (2019), proposes that interactive systems be developed based on the needs, preferences, and limitations of users. This approach is essential in games with educational objectives, as it ensures the accessibility and usability of the experience (KRUG, 2018; NIELSEN, 2022).

Norman (2019) argues that effective design should be invisible, that is, it should allow the user to understand and interact with the system intuitively, without excessive cognitive

effort. The application of these principles in the development of the game "Pixel Adventure" enabled the creation of a user-friendly interface, simplified menus, and accessible mechanics.

Aesthetics in *Pixel Art*

The use of *pixel art aesthetics* , in addition to evoking nostalgia, is a conscious choice that favors stylization, low production costs, and the appreciation of handcrafted visual design. Pagan (2020) highlights that *pixel art* provides a unique visual identity and allows for the symbolic representation of cultural elements with high expressive power, even with technical limitations in resolution.

This visual language proved suitable for the game's purpose, as it allowed for the creation of regionalized settings and captivating characters without compromising the clarity and readability of the interface.

Based on the reviewed authors, it is evident that the game " *Pixel Adventure* " aligns with contemporary trends in the use of interactive technologies for educational and cultural purposes. By integrating user-centered design principles, fundamentals of heritage education, and an attractive visual aesthetic, the project fits into a growing interdisciplinary field with potential for innovation and social impact.

The implementation of the game " *Pixel Adventure* " resulted in the creation of an interactive digital experience with strong cultural and educational appeal. The game was structured around the exploration of five cities in the state of Mato Grosso do Sul: Campo Grande, Corumbá, Bonito, Naviraí, and Costa Rica. Each city features stylized *pixel art visual elements*, representative tourist attractions, and typical recipes, which were carefully researched and adapted to the game format.

Figure 1 shows the initial screen of the *Pixel Adventure game*. Figure 2 shows a map of the Brazilian state of Mato Grosso do Sul with the points selected for the game so far. Figures 3, 4, 5, 6, and 7 show tourist attractions in Mato Grosso do Sul.

Figures 8, 9, 10, 11, 12, 13, and 14 show recipes for typical dishes from the cities of Campo Grande, Costa Rica, Bonito, Naviraí, and Corumbá. The player then prepares the food following the instructions for each recipe and receives points for each correct answer.



Figure 1: Pixel Adventure Game Start Screen.

Source: Author's own work (2025).



Figure 2: Map of the Brazilian state of Mato Grosso do Sul

Source: Author's own work (2025).

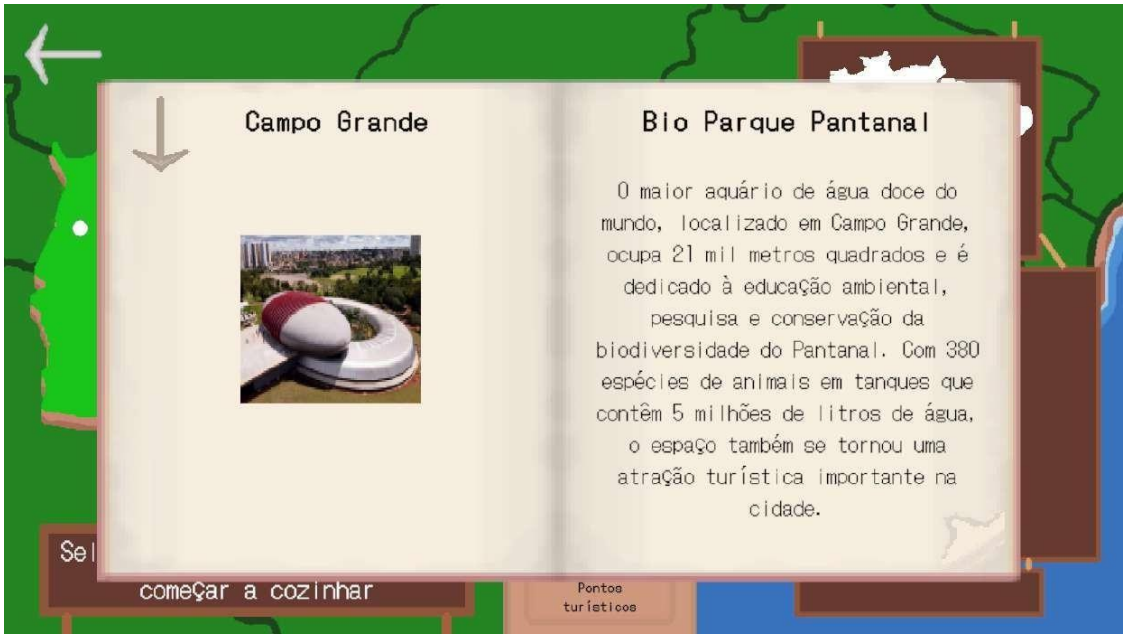

Figure 3: Tourist attraction in Campo Grande-MS.

Source: Author's own work (2025).



Figure 4: Tourist attraction in Bonito-MS.

Source: Author's own work (2025).

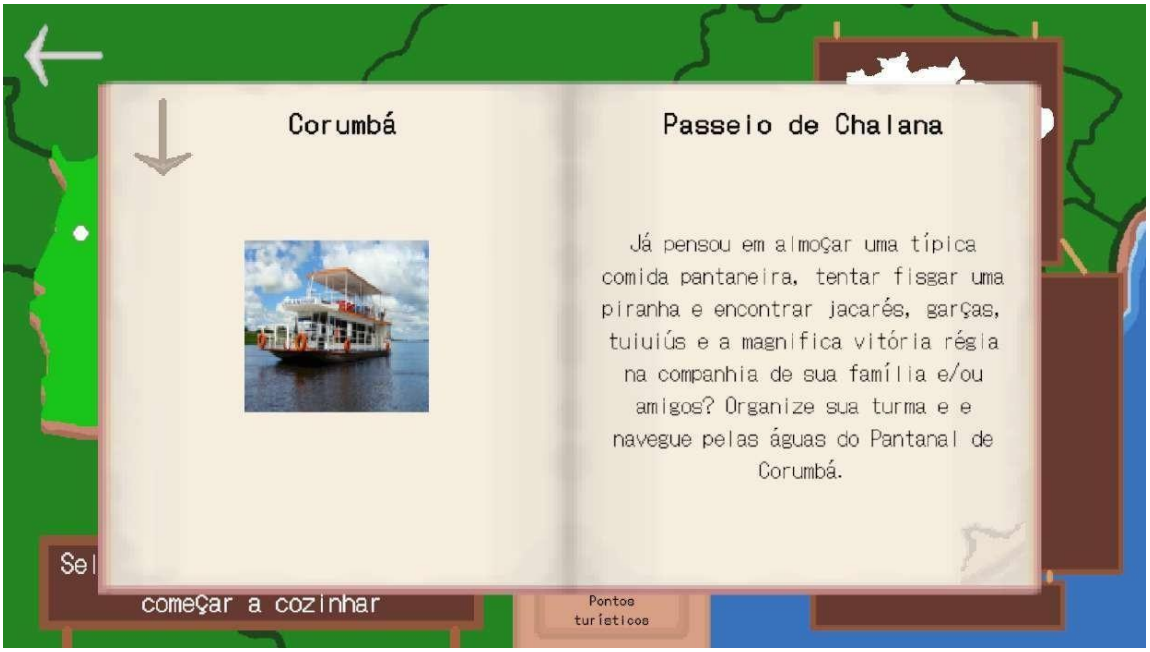

Figure 5: Tourist attraction in Corumbá-MS.

Source: Author's own work (2025).

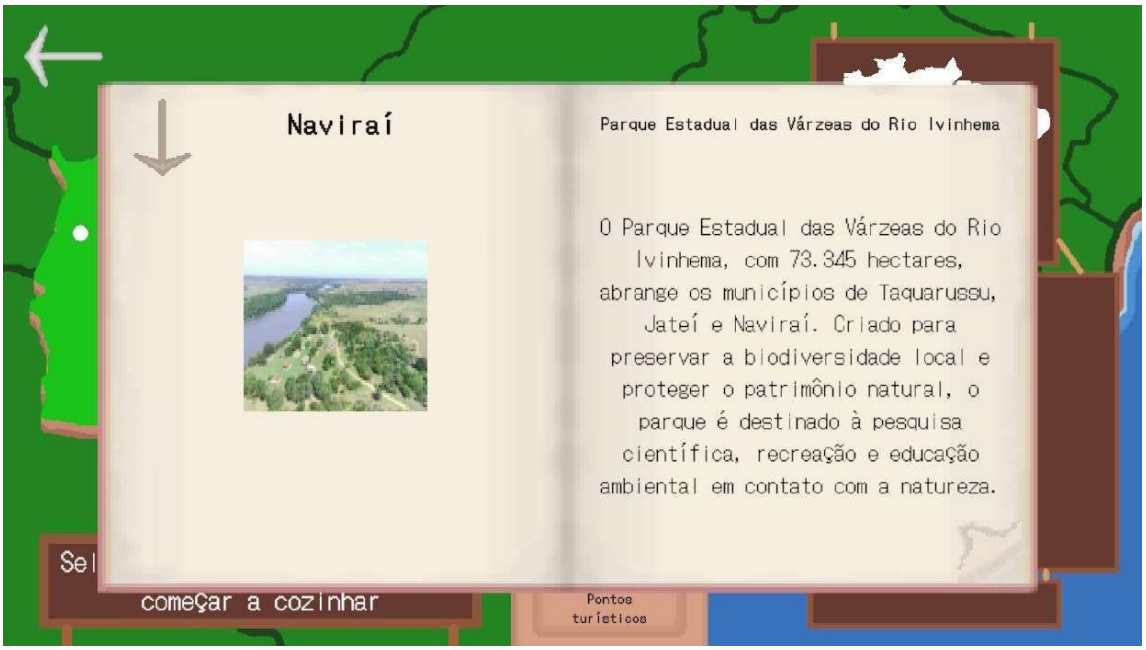

Figure 6: Tourist attraction in Naviraí-MS

Source: Author's own work (2025).



Figure 7: Tourist attraction in Costa Rica-MS.

Source: Author's own work (2025).

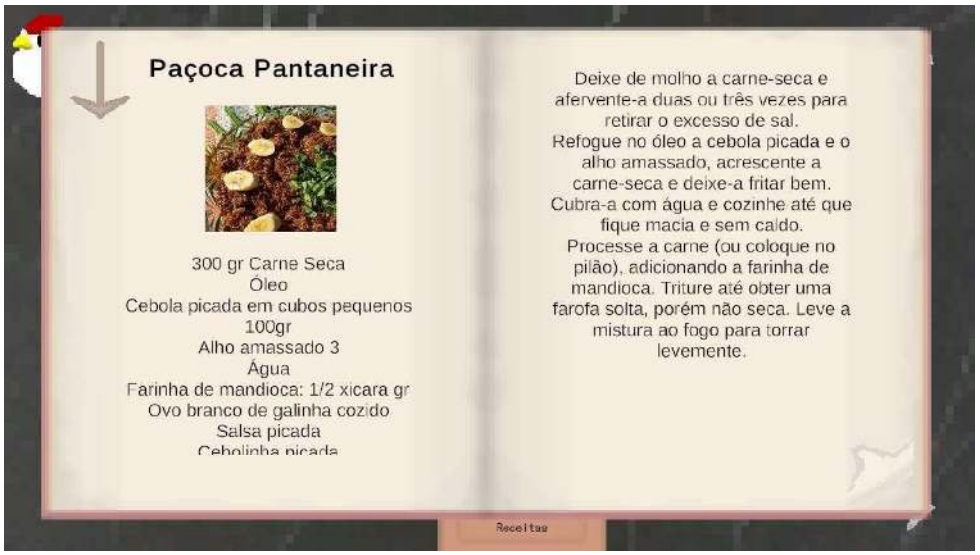

Figure 8: Typical dish from Costa Rica-MS.

Source: Author's own work (2025).

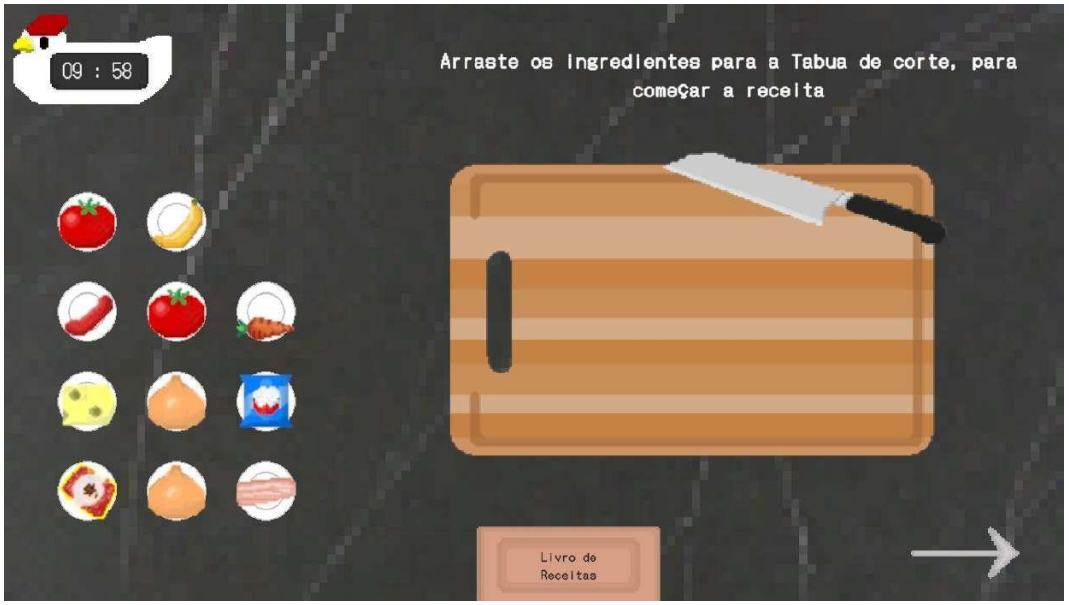

Figure 9: Preparation method for the typical dish following the recipe.

Source: Author's own work (2025).



Figure 10: Score after completing the recipe preparation.

Source: Author's own work (2025).

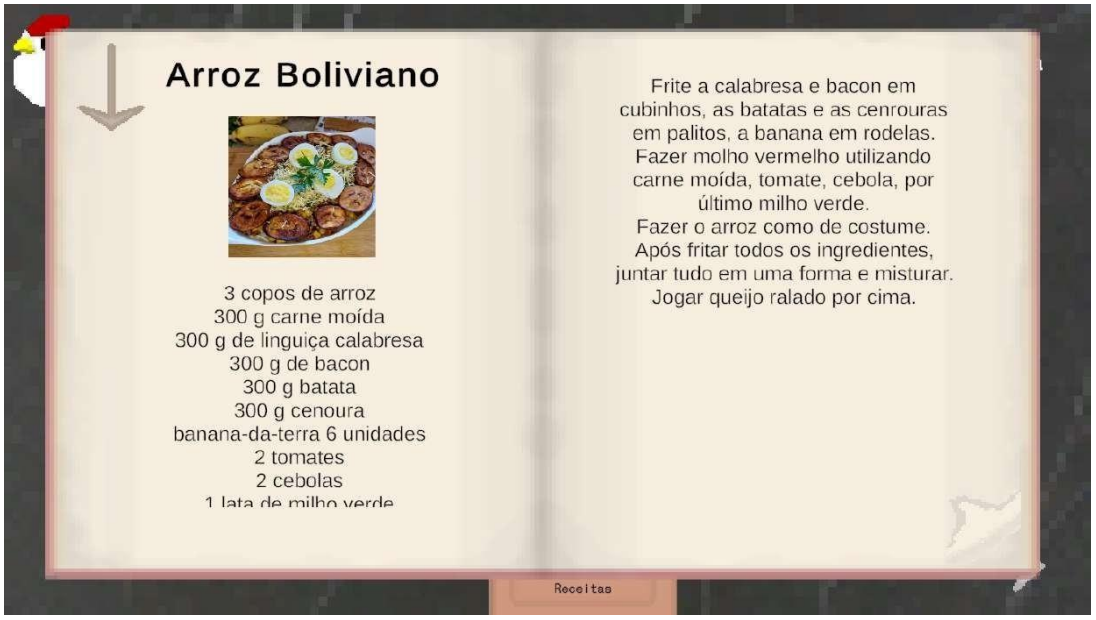

Figure 11: Typical dish from Corumbá-MS

Source: Author's own work (2025).

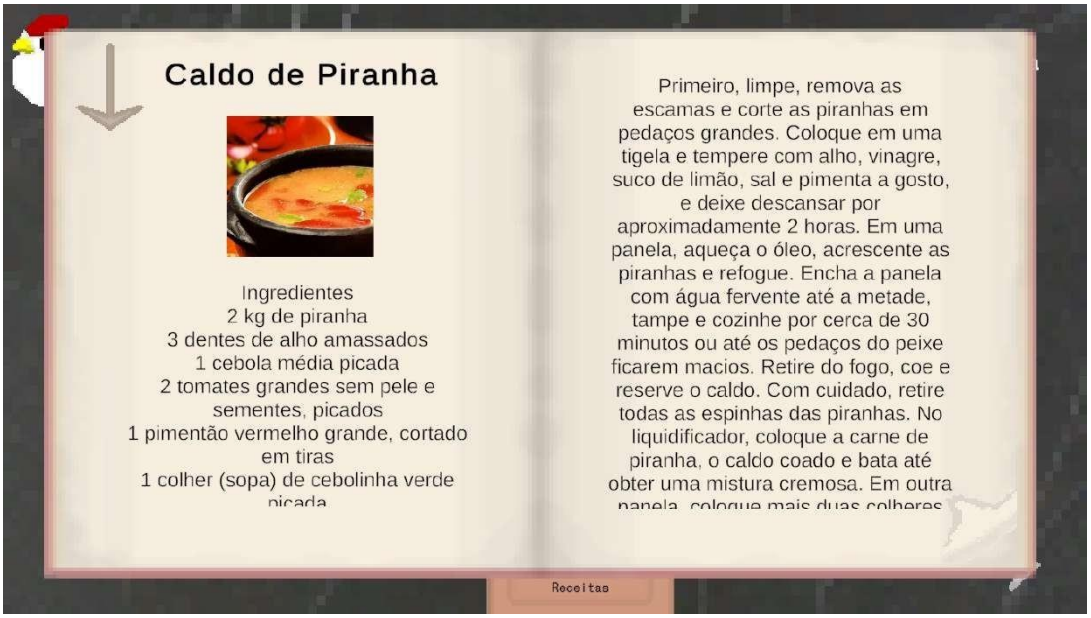

Figure 12: Typical dish from Bonito-MS.

Source: Author's own work (2025).

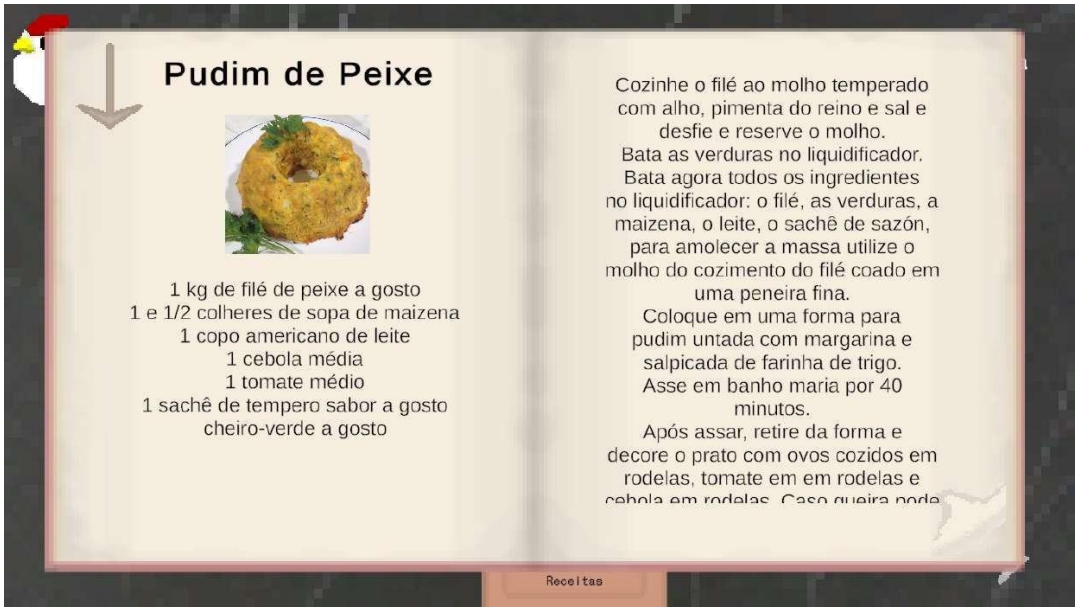

Figure 13: Typical dish from Campo Grande-MS.

Source: Author's own work (2025).

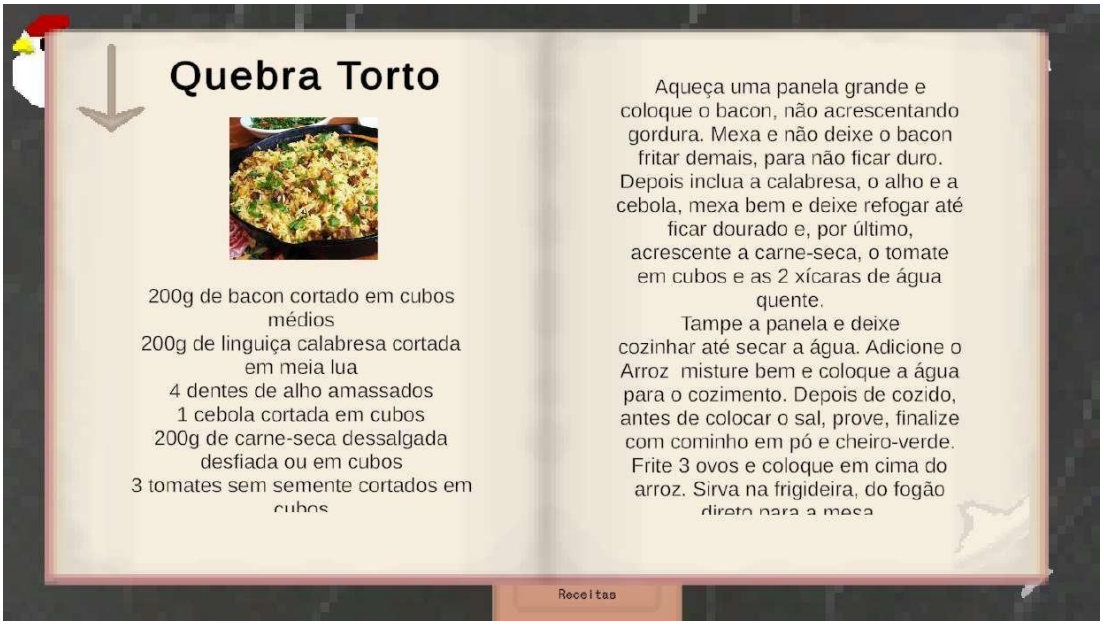

Figure 14: Typical dish from Naviraí-MS.

Source: Author's own work (2025).

Among the main results, the following stand out:

- **Cultural and gastronomic representation:** each city was portrayed with artistic and narrative fidelity, including regional dishes such as Piranha Broth, Bolivian Rice, Pantanal-style Paçoca, Quebra-Torto, and Fish Pudding. These recipes were integrated into the game mechanics as preparation challenges, stimulating regional culinary knowledge.

- **Accessible and attractive graphic design:** the use of *pixel art* ensured a charming and nostalgic aesthetic, favoring visual accessibility. The HUD (*Heads-Up Display* , or information panel displayed on the screen during gameplay) was designed with clarity, displaying timers, instructions, and intuitive interactive menus, aligning with good usability practices (NIELSEN, 2022).
- **Immersion and freedom of exploration:** the game's structure allows players to freely choose which cities to explore and in what order, promoting autonomy and encouraging cultural exploration without imposing linearity. This freedom has generated reports of greater engagement and a sense of discovery among players.
- **Approaching intangible heritage:** the integration between cuisine, tourism and local narrative highlighted the potential of digital games as a tool for valuing intangible heritage (MORALES, 2020; ABREU, 2021), especially by allowing players to interact with traditional stories and knowledge in a playful way.
- **Ease of learning and replayability:** tests showed that players of different age groups were able to quickly understand the rules and interactions, and demonstrated interest in repeating recipes and visiting new cities, which increases the educational potential and longevity of the game.

These results indicate that " *Pixel Adventure* " effectively achieves its objectives, bringing together cultural and educational elements in an engaging, accessible, and innovative game proposal. The next section will discuss these findings in light of theories of game design, heritage education, and human-computer interaction.

DISCUSSION

The analysis of the results obtained from the development and application of the game " *Pixel Adventure* " reveals important theoretical and practical contributions in the field of digital games for educational and cultural purposes. The game's structure directly engages with the principles of Flow Theory (CSIKSZENTMIHALYI, 2004), providing an immersive experience by balancing challenge and skill in exploration and cooking activities. This approach fosters continuous player engagement, allowing them to remain focused and motivated throughout the experience.

Furthermore, the choice of an accessible design, based on *pixel art* and with intuitive controls, is in line with the usability principles advocated by Norman (2019) and Nielsen (2022). The minimalist HUD, the use of contrasting colors, and the simplicity of the menus contribute to making the game accessible to different audiences, including those with little

familiarity with digital games.

Another relevant aspect is the game's contribution to the appreciation of intangible heritage, especially the regional gastronomy of Mato Grosso do Sul. By allowing the player to experience, albeit virtually, the preparation of typical dishes such as Paçoca Pantaneira and Quebra-Torto, the game acts as a cultural and educational mediator, as argued by authors such as Salen and Zimmerman (2003) and Morales (2020). This proposal is aligned with heritage education practices that seek to bring individuals closer to their history, culture, and territory through meaningful experiences.

The freedom of exploration in the game, without the imposition of linearity or excessive challenges, also proves consistent with the principles of self-directed learning (CARROLL, 2019), valuing the pace and preferences of each player. This expands the potential use of the game in formal and non-formal educational contexts, such as schools, museums, and cultural workshops.

Finally, it is important to highlight that the iterative development process, with testing and adjustments based on real feedback, reinforces the value of user-centered design. This practice, foreseen in the ISO 9241-210 (2019) standard, ensures that the final product is functional, relevant, and satisfactory for the target audience.

In this way, " *Pixel Adventure* " is configured as an innovative tool that articulates technology, culture, and education in a playful and accessible proposal, demonstrating that digital games can go beyond entertainment and assume social and formative roles.

CONCLUSION

The development of the game " *Pixel Adventure* : A Journey through Mato Grosso do Sul" demonstrated the potential of digital games as tools for cultural appreciation, educational mediation, and promotion of intangible heritage. By combining regional gastronomy, tourism, and technology in an accessible and engaging experience, the project achieved its objectives of offering an interactive product that informs, educates, and entertains.

The game's concept, centered on non-linear cultural experiences and stimulating curiosity, promotes autonomous learning and strengthens regional identity. The aesthetic and functional choices, based on principles of accessibility, usability, and user-centered design, contributed to making the game inclusive and appealing to diverse audiences.

Based on the methodology applied, the results obtained, and the theoretical analyses discussed, it is concluded that " *Pixel Adventure* " represents a relevant contribution to the field of educational and cultural games. The experience derived from this project also serves as a

reference for future initiatives that wish to explore the potential of digital games in teaching Brazilian history, culture, and traditions.

Looking to the future, it is recommended to expand the project to other Brazilian states, develop mobile and multilingual versions, and conduct studies applying it in school and museum contexts, in order to more deeply assess its pedagogical and cultural impact.

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