

A Ten-Year Systematic Mapping of Cultural Aspects in Brazilian Digital Games

Gabriel Marra D’Martins, Rodrigo Duarte Seabra, Phyllipe Lima

Institute of Mathematics and Computing – Federal University of Itajubá (UNIFEI)
Post Office Box 50 – 37.500-903 – Itajubá – MG – Brazil

{gabriel.marra,rodrigo,phyllipe}@unifei.edu.br

Abstract. Introduction: Culture is recognized as a multifaceted reflection of a society’s ways of life, covering aspects ranging from dress and religious ceremonies to family structures and recreation. In this scenario, digital games have emerged as innovative platforms for documenting and expressing culture, acting as new repositories of collective memory in which cultural and historical meanings are preserved and shared, becoming an integral part of a community’s memorial heritage. **Objective:** This study investigates and analyzes Brazilian cultural preservation and diffusion in digital games developed in the country. **Methodology or Steps:** To investigate the integration of these aspects, we present a ten-year systematic mapping covering academic research published in national databases. The study started with an extensive search of scientific databases, identifying 1182 initial publications. After applying selection and exclusion criteria, the final dataset was narrowed down to 52 publications. **Results:** Most articles emphasize the language and expressions of both Brazilian indigenous peoples and in the teaching of Brazilian Sign Language and Portuguese, with many using Brazilian unique geography as a setting. In addition, social elements, such as Cangaço and the colonization process, are frequently explored. The study also revealed that although Role Playing Games show promise for immersive narratives in Brazilian culture, accessibility is still challenging, with many games unavailable to the public.

Keywords: Cultural Aspects, Brazilian Digital Games, Systematic Mapping.

1. Introduction

In an increasingly digital world, cultural preservation has emerged as an alternative for maintaining a nation’s collective and historical identities. Giddens [2001] argues that culture reflects the ways of life of a society and its constituent groups, ranging from clothing and religious ceremonies to recreational activities and family structures. This preservation is even more challenging and necessary in Brazil, a country marked by cultural wealth. Culture, a people’s history, and collective identity go beyond their physical manifestations, encompassing customs, traditions, folklore, religion, dances, typical foods, and celebrations. These elements, essential for defining a people, are recognized as intangible cultural heritage [Oliveira *et al.* 2019] and require preservation measures as rigorous as those dedicated to tangible heritage.

Digital games thus appear as a way of recording and expressing culture, acting as new “places of memory” where, according to Nora *et al.* [1993], they are any significant unit of a material or ideal order, which the will of humanity or the work of time has converted into a symbolic element of the memorial heritage of any community, incorporating it into the collective memory of that group. By incorporating cultural and

historical elements, digital games can become powerful educational and awareness-raising tools, facilitating immersion in experiences that reflect and exalt the Brazilian cultural diversity. Intending to investigate the incorporation of cultural aspects into Brazilian digital games, this paper presents the result of a systematic mapping process that explored relevant national databases and publications from renowned conferences and journals over the last decade. To improve the rigor of the analysis, the study defined nine cultural categories, which is its main contribution.

The article is structured as follows. Section 2 presents the research methodology used and the research questions, stages, and processes carried out. Section 3 proposes categories for organizing and analyzing the cultural elements mapped. Section 4 discusses the results of the study concerning the research questions defined in Section 2. Finally, the final considerations are set out in Section 5.

2. Research Definition

The study aimed to identify the incorporation of cultural aspects in Brazilian digital games. This research is justified as it explores the national literature to apply these aspects to the context of games, elaborating nine categories related to Brazilian culture. In addition, it presents the main Brazilian cultural elements addressed in the games identified, as well as the genres most present in the studies and how these games are currently made available. The methodology used was based on Petersen *et al.* [2015], addressing questions of interest, the search protocol and selection of repositories, as well as the execution, application of inclusion and exclusion criteria, and data extraction.

2.1 Questions of Interest

The questions of interest provide insight into the incorporation of cultural aspects in Brazilian digital games, and three research questions were defined:

Q1: What Brazilian cultural aspects are present in the digital games developed in Brazil? The question means to identify and analyze the Brazilian cultural aspects incorporated into digital games developed in Brazil, aiming to understand and classify which are more prominent, as well as identifying those less emphasized in the representations. This analysis allowed for a deeper understanding of how Brazilian culture is treated, enabling a discussion about the implications of these representations.

Q2: How are these games available for purchase? There are various ways of making digital games available, whether in the *Google Play* or *App Store* app stores, via the official website of the game or the developer, or via direct download links. It is important to investigate which platform is mostly used to play these games (mobile devices, computers, consoles, or multiplatform), as this information can help identify the target audience. This analysis provided a comprehensive view of the options for accessing and using these games.

Q3: What genres are found in these digital games? Digital games cover various genres, such as simulation, puzzle, adventure, real-time strategy, etc. This question aimed to identify which genre was the most prevalent. By understanding this trend, it was possible to verify the existence of a relationship between the genre of the game and the cultural aspect dealt with.

2.2 Research Execution

To outline the scope of the research, criteria were established to guarantee the reliability and viability of the mapping process. The survey was carried out using five databases: Revista Brasileira de Informática na Educação (RBIE); Revista Informática na Educação: Teoria e Prática (IETP); Revista Novas Tecnologias na Educação (RENOTE); SBC Open Lib – using their respective search engines; and a direct search in the Anais do Simpósio Brasileiro de Jogos e Entretenimento Digital (SBGames), in the “Arts and Design” and “Culture” tracks. The criterion for selecting these databases was that they are the primary vehicles for the publication of scientific articles in Brazil aimed at the research objective and are recognized from an academic point of view.

The search was restricted to publications obtained exclusively from the selected repositories, and the period considered was from January 1, 2013, to December 31, 2023, covering a decade. SBC Open Lib has become a popular base for centralizing works published in national events and journals supported by the Brazilian Computer Society (SBC). For example, since 2021, papers published at SBGames have been indexed in this database, including those from SBIE since 2020. In addition, papers published from June 2021 onwards in RBIE have also migrated to this database. To cover the search since 2013, it was necessary to manually search the SBGames website for papers published before 2021 and the RBIE, where the same procedure was adopted. Note that even after repeated attempts to contact the SBGames organization, it was not possible to access the repository of articles published in 2015. RENOTE and IETP, on the other hand, are not integrated into SBC Open Lib, and the search was carried out directly on the database. The search strings used were seven: *“game” AND “cultur*”, “game” AND “hist*”, “game” AND “brasil”, “jogo” AND “brasil”, “jogo” AND “hist*”, “jogo” AND “cultur*”, “hist*” OR “cultur*” OR “brasil*”*.

Using these strings, 1182 articles were identified and distributed as follows: SBGames – 161 papers; RBIE (until June 2021) – 47 papers; RENOTE – 144; IETP – 48; SBC Open Lib – 782. In this first phase, the total included duplicates were eliminated in the second filtering phase. In the second phase, the titles and abstracts of the papers identified were read, and inclusion (IC) and exclusion (EC) criteria were applied, as shown in Table 1.

Table 1. Set of inclusion (IC) and exclusion (EC) criteria. Source: The authors.

Criteria	Description
IC-01	Games that explore the cultural aspects of Brazil and the various communities or peoples that make it up.
IC-02	Games developed in Brazil.
IC-03	Games published from 2013 to 2023.
EC-01	Games that deal with different themes or have no connection with Brazilian culture or historical periods relevant to the Brazilian history.
EC-02	Games published before 2013.

After this filtering, the 70 papers selected were distributed as follows: SBGames – 31 papers; RBIE (until June 2021) – 2; RENOTE – 4; IETP – 2; SBC Open Lib – 31. In the third filtering phase, the full texts of the 70 papers identified were read, 18 of which were excluded, leaving 52 articles. The aim was to ensure the articles were relevant and adhered to the established selection criteria. Two research authors fully read the papers identified and conducted data extraction, and a third author contributed by resolving any discrepancies. The process consisted in the detailed reading of the documents by the authors and the merging of each author’s extractions to form the final

data to be considered. The studies selected are tabulated in Table 2, which contains the references for each work identified.

Table 2. Catalog of publications selected (continued). Source: The authors.

ID	Reference
S1	Bezerra, A. V. Q.; Medeiros, R. (2016). "Metodologia de criação de mundos baseada na análise de estereótipos e arquétipos da cultura regional". In: Anais do SBGAMES 2016, p. 680-686.
S2	Azevedo, J. L.; Magnoni, A. F. (2016). "Adaptando "Macunaíma" para os games: Modelagem e prototipagem de jogos digitais para ciências sociais e linguagens na educação básica". In: Anais do SBGAMES 2016, p. 664-672.
S3	Cayres, V.; Alves, L. (2016). "Um segundo olhar sobre o roteiro: Consultoria dramática no desenvolvimento do gamebook Guardiões da Floresta". In: Anais do SBGAMES 2016, p. 609-616.
S4	Joselli, M.; Mafta, D. (2016). "Sambamania – Uma releitura do universo do carnaval em um game". In: Anais do SBGAMES 2016, p. 397-403.
S5	Schlemmer, E. <i>et al.</i> (2016). "In Vino Veritas: Um game pervasivo na terra do vinho". In: Anais do SBGAMES 2016, p. 852-858.
S6	Silveira, J. C. (2016). "Jogos digitais como ferramenta cultural: Uma proposta interdisciplinar". In: Anais do SBGAMES 2016, p. 880-888.
S7	Oliveira, F. N. <i>et al.</i> (2016). "Aspectos educacionais e de diversão no jogo "O Mistério das Chaves". In: Anais do SBGAMES 2016, p. 889-895.
S8	Souza, G. R. <i>et al.</i> (2016). "Brasil Ball – A Jornada: Um jogo digital sobre a história do Brasil". In: Anais do SBGAMES 2016, p. 975-981.
S9	Cassol, V. J. <i>et al.</i> (2016). "Sete Povos: Games e realidade virtual para contar a história das missões jesuíticas no Brasil". In: Anais do SBGAMES 2016, p. 990-998.
S10	Carvalho, L. F. B. S. <i>et al.</i> (2016). "Imbuing and evaluating motivation in videogames: Accounts in the teaching of Brazilian Folklore". In: Anais do SBGAMES 2016, p. 1046-1055.
S11	Oliveira, J. A. S. <i>et al.</i> (2017). "Descobrimos o Tapajós: Difusão da história e cultura Tapajônica por meio de um jogo eletrônico". In: Anais do SBGAMES 2017, p. 805-811.
S12	Cordeiro, M. A. S.; Goes, B. S. (2017). "O imaginário amazônico nos games: Uma análise das representações da cultura da Amazônia em Ayri e Aritana". In: Anais do SBGAMES 2017, p. 882-888.
S13	Rodrigues, M. A. F. <i>et al.</i> (2017). "Tangram de Cordel: Geometria e poesia em um jogo sério sobre a cultura nordestina". In: Anais do SBGAMES 2017, p. 839-846.
S14	Machado, T. T. <i>et al.</i> (2020). "Além das Torres: Um resgate cultural para disseminar as lendas de uma cidade". In: Anais do SBGAMES 2020, p. 438-447.
S15	Santana, C. A. <i>et al.</i> (2021). "Big Gamer Brasil: Proposta de um jogo". In: Anais do SBGAMES 2021.
S16	Oliveira, L.; Silva, B. (2018). "Jogo educativo como ferramenta para inclusão do ensino religioso utilizando libras". In: Anais da IV Escola Regional de Informática do Piauí. SBC, p. 160-165.
S17	Nascimento, I. V. L. <i>et al.</i> (2021). "Um jogo para dispositivos móveis com o objetivo de auxiliar o ensino de libras e português". In: Anais do SBGAMES 2021, p. 628-637.
S18	Nascimento, I. V. L.; Falcão, T. P. (2019). "Um jogo para dispositivos móveis com o objetivo de auxiliar a aprendizagem de Libras, ELiS e Português". In: Anais do IV Congresso sobre Tecnologias na Educação. SBC, p. 644-650.
S19	Queiroz, A. R. Q. <i>et al.</i> (2022). "Desenvolvimento de um jogo de educação financeira utilizando elementos da ruralidade do nordeste brasileiro para plataformas Apple". In: Anais do SBGAMES 2022, p. 1455-1459.
S20	Pessoa, L. <i>et al.</i> (2021). "Um StoryBot como apoio a processos de autoaprendizagem através de desafios lógicos matemático-computacionais e valorização cultural". In: Anais do XXXII Simpósio Brasileiro de Informática na Educação, p. 1320-1329.
S21	de Classe, T. M. <i>et al.</i> (2022). "Uai! Que isso só!: Conhecendo o "mineirês" através de um jogo digital". In: Anais do SBGAMES 2022, p. 331-340.
S22	de Lima, I. O.; Serrano, P. H. (2021). "Lançamento e viralização do jogo Vai Juliette". In: Anais do SBGAMES 2021, p. 813-819.
S23	Aires, S. <i>et al.</i> (2019). "Chute certo: Um jogo digital educativo para auxiliar no processo de alfabetização". In: Anais do XXV Workshop de Informática na Escola, p. 753-762.
S24	Viana, I. <i>et al.</i> (2022). "Desenvolvimento de um jogo de corrida de barcos focado em aspectos geográficos da região da Amazônia Tocantina". In: Anais do SBGAMES 2022, p. 253-257.
S25	Galvão, L. F. O. <i>et al.</i> (2021). "Sobrevivendo no sertão da Bahia do século XIX: Uma investigação de usabilidade e acessibilidade do jogo Árida". In: Anais Estendidos do XX Simpósio Brasileiro de Fatores Humanos em Sistemas Computacionais, p. 10-19.
S26	Lourenço, P. <i>et al.</i> (2017). "Sabarabuçu: Um jogo digital educacional, cultural e ambiental para o município histórico de Sabará". In: Anais do IV Encontro Nacional de Computação dos Institutos Federais, p. 224-227.
S27	dos Santos, M. T.; Sarinho, V. T. (2022). "Um jogo de realidade alternativa para a disseminação da cultura e história de Feira de Santana". In: Anais do SBGAMES 2022, p. 458-467.
S28	da Silva, B. C. <i>et al.</i> (2021). "Get Quizfity: Uma proposta de jogo digital voltado para o ensino da cultura afro-brasileira e indígena". In: Anais do SBGAMES 2021, p. 1053-1056.
S29	Oliveira, G. P. <i>et al.</i> (2016). "Jogo educativo com tema histórico: Fundação da cidade de Marabá-PA, e o ciclo econômico do Caucho". In: Anais do XXII Workshop de Informática na Escola, p. 61-70.
S30	Santos, J. A. B. <i>et al.</i> (2021). "Turista do Tempo: Um jogo sério para o ensino da história do Rio Grande do Norte". In: Anais do SBGAMES 2021, p. 600-609.
S31	Pessoa, J. O.; da Rocha, R. V. (2022). "Projeto Saturno: Jogo sério para a motivação e aprendizagem sobre história do Brasil". In: Anais Estendidos do XI CBIE, p. 124-127.
S32	Rios, J. A. <i>et al.</i> (2022). "A história da baiana Rozete e o acarajé de ouro: preservando elementos histórico-culturais por meio de um jogo digital". In: Anais do SBGAMES 2022, p. 148-157.
S33	Aguiar, J. J. B. (2018). "Aprendendo sobre trabalho escravo no Brasil por meio da criação de um jogo digital educativo". Informática na Educação: Teoria & Prática, v. 21, n. 2, p. 82-103.
S34	Firmino Junior, G. <i>et al.</i> (2020). "Protótipo do jogo educativo 2D: Folcmapa, sobre folclore brasileiro "Lenda do Japuçu", utilizando metodologia RETAIN". Informática na Educação: Teoria & Prática, v. 23, n. 2, p. 31-49.
S35	Vahldick, A.; Giachini, E. (2020). "Um jogo sério de aventura sobre a interação com os índios Xokleng durante a colonização de Ibirama/SC". RENO, v. 18, n. 1.
S36	Marques, M. P.; Cordenonsi, A. Z. (2017). "Histórias interativas para a disciplina de história no Ensino Médio: Uma abordagem de autoria compartilhada". RENO, v. 15, n. 2, p. 1-10.
S37	Travassos Sarinho, V. (2017). "LibrasZap – Um jogo baseado em mensagens instantâneas para avaliação de conhecimentos na língua brasileira de sinais". Revista Brasileira de Informática na Educação, v. 25, n. 1, p. 44-59.
S38	Marciano, J. N. <i>et al.</i> (2013). "Karucha Ships Invaders: Cultural issues on the design/development of a Japanese CALL game made by/to Brazilians". In: Anais do SBGAMES 2013, p. 172-180.
S39	Amaral, C. H. <i>et al.</i> (2013). "Quimericka: Introduzindo clássicos da literatura brasileira por meio de aprendizagem tangencial". In: Anais do SBGAMES 2013, p. 424-427.
S40	Tonéis, C. N.; Corral, F. C. C. (2013). "O game como fonte de diálogo no ambiente escolar". In: Anais do SBGAMES 2013, p. 446-454.
S41	Hinterholz Junior, O. <i>et al.</i> (2013). "Açu-Tainá: Museu virtual 3D gamificado de história e geografia do Estado de Roraima". In: Anais do

	SBGames 2013, p. 455-463.
S42	Tsutsumi, H. T.; Petry, L. C. (2013). "Ideogames: Uma proposta metodológica transcultural", In: Anais do SBGames 2013, p. 63-71.
S43	Carvalho, L. F. B. S. <i>et al.</i> (2014). "Disclosing myths of Brazilian folklore through motivational games", In: Anais do SBGames 2014, p. 517-526.
S44	Brito, J. <i>et al.</i> (2014). "Jornada da Criação – Resgate, preservação e disseminação da cultura afro-brasileira através de um jogo eletrônico", In: Anais do SBGames 2014, p. 484-490.
S45	Soares, A. R. A. <i>et al.</i> (2014). "Narrativas míticas em jogo: Um estudo do game "Iracema Aventura" a partir da tradução intersemiótica", In: Anais do SBGames 2014, p. 83-91.
S46	Melquíades, L. G. P. <i>et al.</i> (2023). "Ambientes virtuais, preservação da memória e resistência cultural: Um estudo de caso com o Museu do Cangaço", RENOTE, v. 21, n. 2, p. 67-76.
S47	Bastos, M. <i>et al.</i> (2023). "Yerê e a Ilha Precisa: Um jogo RPG para a aprendizagem de literatura", In: Anais do Simpósio Brasileiro de Informática na Educação, v. 34, p. 925-936.
S48	Record Junior, C. R. <i>et al.</i> (2023). "Vidas Secas: Jogo sério para ensino de literatura", In: Anais do Simpósio Brasileiro de Informática na Educação, v. 34, p. 594-603.
S49	Kist, S. O. <i>et al.</i> (2023). "Jornada Biomas Escolas: Um jogo digital em prol da conservação da biodiversidade", In: Concurso APPS.EDU – Categoria Produto – Anais do CBIE, v. 12, p. 100-103.
S50	Corrêa, A. <i>et al.</i> (2023). "Palavras Mágicas: Um jogo de plataforma para exercitar a Língua Portuguesa", In: Concurso APPS.EDU – Categoria Produto – Anais do CBIE, v. 12, p. 133-136.
S51	Alves, C. <i>et al.</i> (2023). "Avalanche Silábica: Jogo educacional para aprendizagem de encontros vocálicos na Língua Portuguesa", In: Concurso APPS.EDU – Categoria Produto – Anais do CBIE, v. 12, p. 157-160.
S52	Caetano, M. C. <i>et al.</i> (2023). "Web-MAPE: Proposta de um webmuseu sobre a cultura afro-brasileira em Pernambuco", In: Anais do Congresso sobre Tecnologias na Educação, v. 8, p. 469-473.

3. Cultural Aspects Category

In anthropology, culture represents a system of rules that guides how the world is perceived and classified. Cultural rules delimit boundaries and explicit elements, but the way they manifest in real situations is shaped by reality. Although each culture has a finite set of rules, its possibilities for adaptation, expression, and response in specific situations are infinite. Culture provides structure, but interaction with the natural world brings this structure to life, creating cultural diversity [da Matta 2000]. This study identified a range of Brazilian cultural aspects present in digital games developed in the country, covering a rich collection of elements such as typical foods, regional linguistic particularities, folklore, festivals, traditions, customs, artistic expressions, traditional music, regional dances, myths and legends, religious beliefs, and everyday practices. Thus, the categories proposed by this research for classifying the cultural aspects identified in digital games are **Total Social Phenomena** [Mauss 2003], **Music** [Blacking 2007], **Myths and Legends** [Rabaçal 1967], **Festivals and Celebrations** [da Matta 1984], **Cuisine** [da Matta 1984], **Language and Expression** [Câmara Junior 1955], **Geographical Environment** [da Matta 1984], **Religion** [Heidbrink *et al.* 2014] and **Others**. The latter category encompasses themes and elements that do not strictly fit into the other pre-defined classifications, covering nuances and details that, despite not fitting perfectly into the other categories, are relevant to the scope of the research. These categories are fundamental to the organization and analysis of the cultural elements mapped, reflecting the multiple facets of Brazilian culture.

4. Results and Discussion

The papers presented in Table 2, identified by the first column, were analyzed to answer the research issues proposed in the article. Regarding **Q1: What Brazilian cultural aspects are present in the digital games developed in Brazil?**, the results of the mapping of cultural aspects grouped into the categories proposed in Section 3 are presented.

Figure 1 shows that there was a predominance of occurrences in the **Language and Expression** category (42 records), incorporating idiomatic and artistic expressions from Brazilian indigenous peoples, especially groups such as Kaxinawá [S6], Xokleng [S35], Tupi [S4, S14, S30, S40], Carijó [S14], Tapuia [S34] and Tabajara [S45]. These expressions are skillfully woven into the games as names for interactive elements and are reflected in the characters' names, promoting a deep linguistic and cultural

immersion. The presence of Brazilian literary movements, such as Romanticism [S45, S47], was observed, and they were notable for their Indianist phase. There was also an innovative and playful approach to teaching Portuguese and Libras in five games [S16, S17, S18, S23, S37], highlighting the search for inclusion and education. Cordel literature [S3, S13, S25], rich in narratives and visual aesthetics, highlights the influence of the Northeast in this category. Nevertheless, the presence of African culture and its intrinsic importance to the Brazilian cultural mosaic was verified in six occurrences [S4, S10, S11, S28, S44, S52].

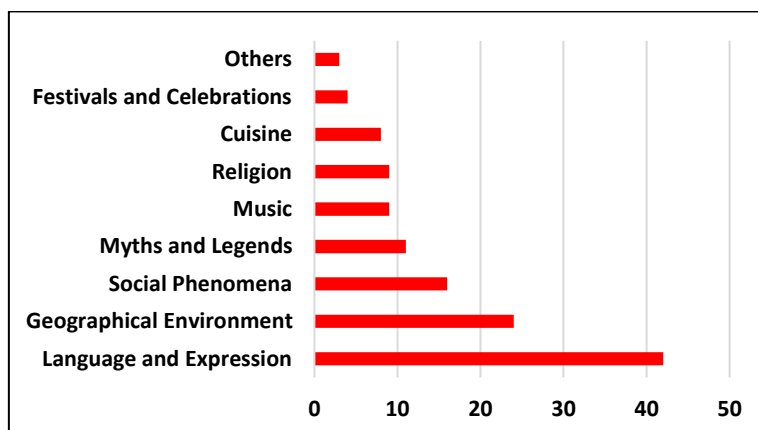


Figure 1. Cultural aspects by category. Source: The authors.

The **Geographical Environment** category was the second most prominent, featuring nine Brazilian cities whose characteristics, including architectural elements, monuments, and tourist attractions, were integrated into the game environments [S7, S14, S26, S27, S29, S32, S35]. As well as urban areas, the research also revealed allusions to Brazil's defining ecosystems: the Caatinga and the Amazon Rainforest, which feature in the games settings and narratives [S11, S24]. Paper P25, which belongs to the survival genre, is set in the Caatinga, simulating the experience of adversities typical of this challenging ecosystem, such as drought. Also noteworthy is the game "Jornada Biomas Escolas" [S49], in which the player has contact with the main Brazilian biomes, enriching their knowledge of the country's biodiversity and geography.

The **Total Social Phenomena** category recorded 16 occurrences, encompassing landmark events in Brazilian history. This category identified references to Cangaço [S1, S27, S46] and Messianismo, with particular emphasis on the Guerra dos Canudos [S8 and S25] and the Ciclo do Ouro [S26]. Paper S30 is particularly wide-ranging, covering topics such as Cangaço, the colonization process of the Brazilian territory, Coronelismo, and Escravidão. The Missões Jesuíticas are highlighted in paper S9. In addition to these, the process of Italian immigration to Brazil is explored in paper S5 and the phases of Romantismo Brasileiro in S47, broadening the spectrum of study in this category. Moving on to the **Myths and Legends** category, the research indicates a modest but notable presence, highlighting the importance of Brazilian folklore in digital games. Eleven occurrences were identified in this category, seven dedicated to nationally renowned folkloric entities, such as Vitória Régia, Curupira, and Iara [S3, S10, S12, S20, S34, S40, S43]. These mythical figures are woven into the games narratives, playing crucial roles, sometimes as antagonists and sometimes as non-playable characters. The category also includes regional folklore, with two mentions of urban legends, specifically the "Bicho do Tomba" in Feira de Santana – BA [S27] and

the “Gnomo da Guarita” in Torres – SC [S14], and indigenous (Tupã) and African (Orixás) deities, present in articles S44 and S45.

In the **Music** category (nine occurrences), the presence of musical manifestations of the rich complexity and depth of indigenous cultural heritage stands out, evidenced in four different situations: the Carimbó dance from the state of Pará [S11]; the characteristic sound elements of the Kaxinawá people [S6]; the musical traditions of the Tupinambá [S12]; and the dances of the Tapayuna people, linked to the work “Macunaíma” [S2]. In turn, the influence of African music in Brazil, represented by samba [S4], is mentioned in isolation. Despite the significant presence of samba in Brazilian culture and its global repercussions, this reference may suggest an under-representation of this musical style in the games examined. The musicality of the Northeast of Brazil is recognized in two different contexts: as a soundtrack in S1 and through the song “Correio da Estação do Brás” by Tom Zé in S27 and aspects of Cangaço music in S46.

In the **Religion** category, nine occurrences were identified, demonstrating the diversity and intersection of religious practices and beliefs in Brazil. The indigenous religion is represented by paper S12, which deals with the spirituality of the Tupinambá peoples through their religious entities. The Christian aspect is covered in papers S9 and S16, focusing respectively on the Jesuits’ indigenous catechization and the teaching of Christianity using the Brazilian Sign Language (Libras). Note that the combination of African and Christian traditions is explored both in S4, linking elements of these religions with the Christian origin of Carnival, and in S32, which also addresses the relationship between these two aspects during the games narrative. The strong relationship between African and indigenous religions is investigated in articles S10 and S28. The former uses elements of Brazilian folklore, which is strongly influenced by these cultures. The latter uses components of these religious traditions in a game of the quiz genre, aiming to promote and to preserve these rich cultural heritages using gamification elements.

There were eight occurrences of Brazilian gastronomy, represented by the **Cuisine** category, reflecting the importance of typical dishes in the country’s cultural narrative. The game “A história da baiana Rozete e o acarajé de ouro” [S32] uses the emblematic acarajé of the Brazilian Northeast as the central axis of its plot. Paper S29 highlights the significance of açaí, a fruit native to the Amazon region, and cassava, a fundamental and transversal ingredient in Brazilian gastronomy. In the context of Italian immigration and its culinary influence, S5 explores winemaking. S26 sheds light on the peculiarities of Minas Gerais cuisine, emphasizing the gastronomy of the city of Sabará. S30 discusses cashew cultivation, typical of the Northeast, once again recognizing cassava as a central element in national cuisine.

The **Festivals and Celebrations** category had only four occurrences, with festivals from the Northeast region being identified, exemplified by the Boneco de Olinda [S1] and the traditional Boi Bumbá celebration, whose origins are European, but which has substantial indigenous and African influence [S12]. Carnival, a cultural event of national and international prominence, is mentioned in two different instances: in the game “Máquina do Carnaval” [S4], which combines both religious and carnival elements in a game involving strategy and rhythm; paper S27 deals with Carnival and the traditional Bando Anunciador festival.

Finally, in the **Others** category (three occurrences), there was an emphasis on contemporary Brazilian culture, especially television entertainment, emphasizing reality shows such as Big Brother Brasil [S15, S22]. There was only one mention of soccer [S23], a sport with a notoriously rich and successful history in Brazil. This one-off observation suggests a possible under-representation of soccer in this data sample, in contrast to its cultural and historical relevance in the country.

In the following research question – **Q2: How are these games made available for purchase?** – the diversity of methods by which games are made available is remarkable. This study investigated 53 games and the platforms on which they were released, focusing solely on published works on these games. Note that Table 2 shows 52 articles, but as one deals with two games, this makes 53 games in total; 19 are accessible to the public by free or paid acquisition, the vast majority of which are offered free of charge. Of these, eight can be found in mobile app stores, mainly the *Google Play Store* for *Android*, while three are also mentioned in the *App Store* for *iOS*. The articles did not specify whether the games require payment on these platforms.

Online games were those available on the web or specific PC platforms such as *Steam* and *Discord*. Of the online games mapped, 11 were identified. Two cost money because they are on *Steam*. Of the others, eight are offered free of charge, three of which are on the developers' websites. The research also highlights games with their websites or hosted in specific repositories [S17, S35, S37, S49]. The issue of unavailability was also relevant in the survey. Surprisingly, 35 (66%) of the 53 games are publicly inaccessible. Of these, four are just concepts or prototypes based on game design methodologies, such as RETAIN – an instrument designed to guide the creation and evaluation of serious games [Firmino Junior *et al.* 2020]. In addition, 21 games were tested in educational contexts, covering primary, secondary, and higher education. One example that deserves to be highlighted is “Get Quizzfty” [S28], introduced to university students in a specific subject at the Federal University of Ceará as a teaching resource and a potential tool for engagement in academic events.

The results point to a notable distinction between the testing phase of a game and its market launch. Even though many articles conducted extensive testing to validate their ideas, in 28 situations identified, these games did not progress to a market launch. Refinement based on feedback, albeit widely practiced and often resulting in positive evaluations, often failed to translate into the continuation of the game project. In addition to the challenges inherent in development, economic viability can be an additional barrier. Without solid economic feasibility studies, developers may find it difficult to justify or proceed with the commercialization of these games. We observed that 35% of the games covered are easily accessible to the public, with most being free and distributed mainly on mobile and online platforms, including app stores and developers' websites. In contrast, more than half of the games identified in the survey are unavailable to the public, remaining at the concept, prototype, or testing stage in educational environments. This scenario highlights a discrepancy between the conception and practical implementation of games, with many not reaching the market despite positive feedback in testing phases, possibly due to a lack of economic feasibility studies or other development challenges.

The third research question – **Q3: What genres are found in these digital games?** – shows that the diversity of genres in the digital games industry is vast (Figure 2), ranging from immersive RPGs to casual puzzles. This variety is notable across platforms, with PCs being more often associated with graphically rich and complex

titles, while mobile devices tend to favor faster, more intuitive games. Within the scope of this systematic mapping, it becomes essential to examine the genres of these games, as this can trigger future discussions between game genres and the process of inserting and mapping culture in them. In addition, the analysis may reflect the Brazilian scenario of game genres investigated by the scientific community.

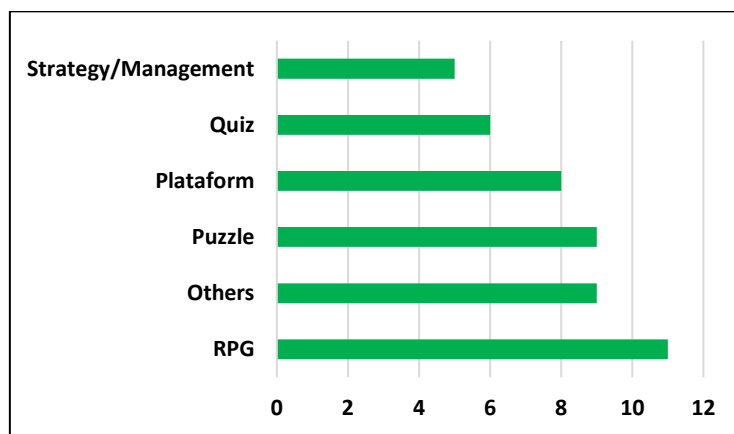


Figure 2. Number of games by genre. Source: The authors.

This research found that 11 games are of the RPG genre, depicting elements of Brazilian culture and history. In five of these works [S1, S5, S29, S30, S35], total social phenomena were identified to be treated as central thematic axes. This inclusion reflects an intention to engage players beyond entertainment, aiming to promote awareness and deep involvement with Brazil's social complexities. This strategy aligns with the principles articulated by Gee [2003], who recognizes the potential of games to engage participants in a process of immersion, experiencing the role of characters intertwined in rich and challenging historical and cultural contexts. In turn, “Sertão Profundo” [S1] and the others mentioned above, by addressing the phenomenon of Cangaço and other significant socio-cultural aspects, act in line with the perspective of McCall [2016], who sees simulations and games as an opportunity to promote immersion in historical contexts, allowing players a more authentic understanding of historical and social systems. They provide a scenario where total social phenomena are not mere backgrounds but active elements that shape the gaming experience. Thus, these RPGs offer players a visual and aesthetic recreation of history and an immersive and educational experience, fostering a deeper understanding and personal connection with Brazil's cultural heritage.

In addition to RPGs, quizzes, platforms, and puzzle games were featured prominently in the survey. Quiz-type games are gamified test formats. Gamification refers to integrating elements often related to games, such as narrative, feedback, and reward systems, into environments that are not initially playful [Fardo 2013]. Among the genres identified, which total 15 occurrences (puzzle and quiz), papers S17, S18, S23, and S37 are aimed at literacy education, emphasizing learning Libras and Portuguese. At the same time, games S10, S20, S28, S32, and S52 aim to promote cultural awareness, covering themes related to indigenous peoples, African peoples, and elements of Brazilian folklore. These games highlight the importance of these groups and narratives in the country's diverse cultural landscape. Religious practices of African and indigenous origin, legends such as Saci and Negrinho do Pastoreio, and the different biomes of the Caatinga and the Amazônia are repeatedly used to provide context and depth to these play experiences. It is worth highlighting the number of

games in the “Others” category, totaling nine occurrences. This category includes games whose genres were not defined or clear enough to be identified in their respective articles, with some authors defining these games as “Casual Games” found in articles S38 and S42.

The results highlight a significant tendency for digital RPGs to address Brazil’s rich history and culture. The focus on total social phenomena as central elements exemplifies the merge of entertainment and educational and cultural initiatives. The popularity of quiz and puzzle games and initiatives aimed at teaching literacy and valuing indigenous and African cultures attest to the adaptability of games as tools for education and for promoting cultural awareness. This diversity shows the potential of digital games as entertainment and as platforms for valuing and recognizing the country’s vast cultural heritage, impacting local players and a worldwide audience.

5. Final Considerations

The mapping conducted analyzed 52 articles on Brazilian cultural representation in digital games. Language and expression, with a focus on linguistic elements of indigenous peoples, are widely covered, followed by the geographical environment, where Brazilian cities and regions are used as background. Total social phenomena often emerge as the central axis of the narratives. Only 35% of the games were observed to be available to the public, most of them for free. Among the genres, RPGs are predominant, reflecting the preference for immersion, which, together with the approach to total social phenomena, is used as a strategy for learning and engaging with Brazilian culture. The analysis also indicates the need for developers to make more games available, promoting greater access and interaction with these cultural elements. Notably, most of these games have only been implemented up to the testing or prototyping stage.

One of the limitations of this study is the search strings used to collect the data. These can influence the results, as different strings can yield different results. Therefore, the selection of works may have failed to capture some relevant studies. Secondly, the focus of this study was limited to games produced by the scientific community, excluding games from the national industry. Finally, the categories proposed and used for analysis, the main contribution of this research, require extensive evaluation by the scientific community. This implies that the categories proposed may need further refinement and validation to ensure a more adequate representation of cultural aspects in games.

International articles could also be included in the analysis as part of future work, providing a broader and more diverse perspective on cultural representation in digital games. In addition, a comprehensive mapping that explores cultural aspects within the domain of the Brazilian games industry could reveal how these representations compare with those found in the scientific community. Another area of interest is a detailed study of Brazil’s historical periods set and portrayed in Brazilian games, which could offer valuable data on how national history and culture are interpreted and transformed into gaming experiences. These directions will not only expand current understanding but also enrich the field of study of cultural and historical representation in digital games.

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