

Virtual Museum in the Metaverse: An educational experience on History and Racism in Nursing

Museu Virtual no Metaverso: Uma experiência educativa sobre História e Racismo na Enfermagem

Museo Virtual en el Metaverso: Una experiencia educativa sobre Historia y Racismo en Enfermería

Received: 01/27/2026 | Revised: 02/01/2026 | Accepted: 02/03/2026 | Published: 02/04/2026

Juliana Arantes

ORCID: <https://orcid.org/0000-0003-1575-7770>

São Paulo State University Júlio de Mesquita Filho, Brazil

E-mail: arantesjuliana84@gmail.com

Julio Cesar David Pereira

ORCID: <https://orcid.org/0009-0005-1247-4064>

São Paulo State University Júlio de Mesquita Filho, Brazil

E-mail: juliocdp@live.com

Ana Silvia Sartori Barraviera Seabra Ferreira

ORCID: <https://orcid.org/0000-0002-2035-7731>

São Paulo State University Júlio de Mesquita Filho, Brazil

E-mail: ana.ferreira@unesp.br

Abstract

Objective: To develop an innovative educational proposal using the metaverse to promote an immersive and reflective experience on the history of nursing and its historical challenges. The initiative aimed to expand students' understanding of the role of Black women in the profession, highlighting the intersectionality between technology, education, and social empowerment. **Method:** This study is characterized as an experience report conducted in a technical nursing program in the interior of the state of São Paulo, Brazil. The experience involved four face-to-face sessions totaling 14 hours, during which students explored a virtual museum, interacted with historical content, and participated in gamified activities. Tools such as Spatial.io and Ready Player Me were used to create virtual environments and avatars, providing an accessible and interactive educational experience. **Results:** The findings demonstrated that the use of the metaverse enhanced learning and promoted critical reflections on inclusion, racism, and professional identity. **Conclusion:** Digital immersion is a strategy capable of integrating pedagogical sensitivity and technology, making teaching more dynamic and inclusive.

Keywords: Metaverse; Virtual Museum; History of Nursing.

Resumo

Objetivo: Desenvolver uma proposta educacional inovadora, utilizando o metaverso para promover uma experiência imersiva e reflexiva sobre a trajetória da enfermagem e seus desafios históricos. A iniciativa buscou ampliar a compreensão dos alunos sobre o papel das mulheres negras na profissão, destacando a interseccionalidade entre tecnologia, educação e empoderamento social. **Método:** O estudo caracteriza-se como um relato de experiência, desenvolvido em um curso técnico de enfermagem, no interior do estado de São Paulo. A experiência envolveu quatro encontros presenciais, totalizando 14 horas, nos quais os alunos exploraram o museu virtual, interagindo com conteúdos históricos e participando de atividades gamificadas. Ferramentas como *Spacial.io* e *Ready Player Me* foram utilizadas para a construção dos ambientes e avatares, proporcionando uma vivência educativa acessível e interativa. **Resultados:** Demonstraram que o uso do metaverso potencializou o aprendizado, promovendo reflexões críticas sobre inclusão, racismo e identidade profissional. **Conclusão:** A imersão digital é uma estratégia capaz de unir sensibilidade pedagógica e tecnologia, tornando o ensino mais dinâmico e inclusivo.

Palavras-chave: Metaverso; Museu Virtual; História da Enfermagem.

Resumen

Objetivo: Desarrollar una propuesta educativa innovadora utilizando el metaverso para promover una experiencia inmersiva y reflexiva sobre la trayectoria de la enfermería y sus desafíos históricos. La iniciativa buscó ampliar la comprensión de los estudiantes sobre el papel de las mujeres negras en la profesión, destacando la interseccionalidad entre tecnología, educación y empoderamiento social. **Método:** El estudio se caracteriza como un relato de experiencia desarrollado en un curso técnico de enfermería en el interior del estado de São Paulo, Brasil. La experiencia incluyó

cuatro encuentros presenciales, totalizando 14 horas, en los cuales los estudiantes exploraron un museo virtual, interactuaron con contenidos históricos y participaron en actividades gamificadas. Se utilizaron herramientas como Spatial.io y Ready Player Me para la creación de los entornos virtuales y avatares, proporcionando una experiencia educativa accesible e interactiva. Resultados: Los resultados demostraron que el uso del metaverso potenció el aprendizaje y promovió reflexiones críticas sobre inclusión, racismo e identidad profesional. Conclusión: La inmersión digital es una estrategia capaz de integrar la sensibilidad pedagógica y la tecnología, haciendo la enseñanza más dinámica e inclusiva.

Palabras clave: Metaverso; Museo Virtual; Historia de la Enfermería.

1. Introduction

Educational innovation has gained prominence due to rapid technological advances and their impact on education. It is therefore essential for teachers to keep up to date and be aware of the main innovations in technology and pedagogy. The creation of new educational spaces, the adoption of new methodologies, and the effective integration of digital devices and virtual learning environments have become crucial to modern teaching practice. Among the prominent innovations of recent years, the metaverse has emerged as an alternative pedagogical tool (Diaz, 2020).

The “Metaverse” combines the words ‘meta’, which means virtual, and ‘verse’, which refers to the universe, corresponding to an immersive, collective, and persistent environment in which the subject can participate in real-time in the representation of a virtual world (López et al., 2022). The idealization of a metaverse was first presented in 1935 in the book “The Pygmalion's Spectacles” by Stanley G. Weinbaum, which describes Paracosmos, a virtual city accessible through specific glasses. The term “metaverse” was first mentioned in 1992 in Neal Stephenson's book “Snow Crash”. So the metaverse is not new, what is new is the way it is being explored in various areas, including leisure, education, and the corporate world (Castro & Maciel, 2023).

The metaverse consists of complete virtual environments that involve and immerse users, allowing innovative interactions with digital content and other participants, and its proper use can contribute to a new conception of learning in education, providing new opportunities for exploration, experimentation, inclusion, and collaboration in immersive spaces (Lópes-Belmont et al., 2023). With its ability to reconstruct spaces, promote immersive interactions, and create hybrid learning experiences, the metaverse offers an alternative approach to traditional teaching. By combining virtual and physical learning environments, metaverse-facilitated education enables gamified and experiential learning that incorporates inclusive elements for participants (Yeganeh et al., 2024).

Consequently, it is essential that educators prepare themselves for the opportunities and challenges posed by the metaverse, as well as virtual and immersive learning environments in general, in order to take advantage of its potential as a pedagogical tool (Lampropoulos, 2024). This research explores the potential of the metaverse to reshape learning environments and increase adult learners' engagement, knowledge retention, and internalization of values. By addressing the unique needs of adult learners and harnessing the immersive capabilities of the metaverse, this study contributes to the theoretical and practical understanding of how emerging technologies can transform education and work with sensitive issues within social, political and ideological contexts (Ren, Tan, Guo, 2025; Rysul'ová, 2024), enabling critical-reflective moments of professional historical approach.

The incorporation of immersive technologies into teaching, such as the metaverse, is socially relevant, especially in the current context, where discussions about inclusion and diversity are becoming increasingly constant. The emphasis on a racial approach in nursing education is in line with public policies to promote racial equity and combat structural racism, which still has a negative impact on the experiences of marginalized groups in the healthcare sector (Brazil, 2025). By proposing the use of the metaverse in the construction of a virtual museum, this work is part of the global movement for technological

innovation in education, promoting more dynamic and accessible teaching. In this way, it contributes to training future nursing professionals to be more aware of the historical and social issues that impact the profession and care practice.

This work reinforces the role of nursing education in promoting a more just and equitable society. By addressing racial issues and integrating immersive technologies, it offers an educational strategy that prepares future professionals to deal with the complex challenges of health care. This multidimensional approach also encourages the construction of educational spaces that foster respect for diversity, strengthening the profession's ethical and social commitment. Thus, this study not only contributes to improving nursing education, but also establishes a dialog between technology, education, and social responsibility, broadening the horizons for future research in the area.

With this premise in mind, we can ask ourselves the question: how can we teach the history of nursing using an immersive methodology with a racial approach?

The aim of this study was To develop an innovative educational proposal using the metaverse to promote an immersive and reflective experience on the history of nursing and its historical challenges.

2. Methods

A qualitative descriptive study was conducted (Pereira et al., 2018), of the experience report (ER) type (Barros, 2024; Gaya & Gaya, 2018), about learning the history of nursing in the technical course at a professional education institution in the countryside of the state of São Paulo. The ER helps in the construction of knowledge in academia and society, based on information, references, dialogue, and criticism, collaborating with scientific progress. The strategy for constructing and writing the ER was developed from a structure based on assumptions with the suggestion of a facilitating script for writing by Mussi et al., 2021.

The experiment was carried out in April 2024, in a sequence of 4 evening classes, with a workload of 3.5 hours per meeting. The curricular unit in which the activity was carried out consisted of 60 hours and aimed to promote knowledge about the systematization of nursing care, addressing reflective theoretical concepts focused on history and contemporaneity. The study is an innovative, reflective, and dynamic classroom experience, contrasting a conceptual and passive theme.

This ER describes the construction of a virtual museum in the metaverse for teaching the history of nursing, with an emphasis on the racial approach. The initiative was led by a nursing teacher, who was responsible for devising and developing the project. The design of the project required a collective effort and dedication of two weeks, requiring technical assistance to reserve a suitable room for technological resources and infrastructure to accommodate all the students. The group of students comprised 28 students at the initial stage of the technical nursing course, who were experiencing the first concepts of the profession. These students had a high school education and ranged in age from 18 to 54, with an average age of 36. The inspiration for the project came from the Anna Nery National Nursing Museum (MuNEAN), located in Bahia. The museum is a representation of nursing professionals told in the form of a story.

To build the museum, it was necessary to share the experience with other teachers at the institution to incorporate the concepts into the technical creation. A computer science teacher, responsible for the Innovation and Entrepreneurship committee, and a learning teacher, with a degree in psychology and experience in speaking about racial issues, who is a member of the Diversity, Inclusion and Peace Movements committee, helped with the creation of the metaverse. This interaction was particularly necessary in order to structure practical and sensitive issues for society.

The construction of the museum in the metaverse used Spacial.io technology to create the virtual environment (Museum) and the Ready Player Me platform to create the avatars.

Spacial.io is a platform for creating interactive virtual spaces that allow customized environments to be developed for

immersive experiences (Rasyida et al., 2023). This tool was essential in the construction of the virtual museum, providing resources for 3D modeling, real-time interactions, and intuitive design, facilitating the integration of historical and cultural content relevant to the subject of nursing. Through its functionalities, it was possible to create a space that combined accessibility and realism, allowing students to explore narratives and exhibitions in an immersive way, enriching the learning process.

Ready Player Me was used to create the avatars that represented the participants in the virtual environment. This tool offers an accessible platform for creating personalized digital identities, making it possible to choose physical characteristics and styles that reflect the diversity of the students and the target audience (Alcántara et al., 2024). The importance of this tool lies in the humanization of the virtual environment, allowing greater identification and engagement of participants with the museum, as well as promoting inclusion and representativeness in the educational context.

In order to carry out the activity, it was necessary to have a suitable classroom with a laptop for each student, so that they could immerse themselves independently and remain focused on their character, allowing them to explore all the environments and sensory experiences without interfering with their identity. As the technologies used were virtual platforms that demanded a lot from the processor and memory of the physical devices, a Dell Latitude 3240 15.6-inch notebook was used, with an 8th generation Intel i5 processor, 24GB of DDR4 memory and a 500GB SSD hard drive, using the Microsoft Windows 10 Home operating system and a basic black Microsoft optical mouse, and a Jabra GN wired headset, the devices were connected to the institutional network with access to the global computer network via a dedicated link, this stable connection granted the students speed and constant navigation, providing them with the best digital experience.

This experience report fully respected the ethical principles relating to the privacy and confidentiality of the participants. There was no collection of personal data, questionnaires, or formal research instruments. All the activities carried out were strictly pedagogical and aimed at classroom learning. No names or identifiable information were disclosed throughout the project, guaranteeing the anonymity of those involved. In this way, the development of the virtual museum in the metaverse followed an ethical approach that prioritized respect for the participants and the responsible use of educational technologies. The experience report was based on Resolution No. 510/2016 of the National Research Ethics Council (CONEP), which states that activities carried out exclusively for the purpose of education, teaching, or training without the aim of scientific research, by undergraduate students, technical students or professionals in specialization, in line with Item VIII of this resolution, will not be registered or evaluated by the CEP/CONEP system.

3. Experience Report and Discussion

To experience the virtual nursing museum in the metaverse, it was necessary to carry out some preliminary procedures. On the first day of the activity, all the students registered a personal email address in order to receive a link inviting them to enter the Virtual Museum: <https://www.spatial.io/s/Juliana-Arantess-Nursing-Museum-660ef6998e55d646b90fb1e9?share=8581938087216433261>. The link was provided by the teacher and each student had individual access to the space. It was noted that many students already had an email address, but others had never used this communication tool before and needed help setting it up. After generating the email, the students logged on to <https://readyplayer.me/pt-BR>. This site was responsible for creating the avatars. Avatars are digital characters that can be singularized to represent the user in the cyber environment, resulting in high similarity to how the individual recognizes themselves (Souza et al., 2021). Each student could build their own character and determine the way they most identified with it; there were no barriers to the creative process, and feeling good was the goal. The creation of an avatar was not mandatory for visiting the museum, as it creates generic avatars for browsing, but the student would not have a virtual identity of their

own and this made it possible for them to be recognized among their peers, which is why the teacher encouraged the prior creation of characters. Upon entering the museum, the students were able to import their avatars into the platform and replace the generic avatars.

It was noticeable that the students initially had difficulties with computer concepts, such as: turning on the laptop, connecting the mouse and headphones, plugging the power supply into the socket and into the device, connecting the internet cable, setting up the email, some did not have an email, setting up the avatar, entering the metaverse via a link sent to the email, navigating within the metaverse). This reinforces the need to prepare healthcare teachers for the use of technology and computer skills, as the merging of concepts in education, health, and technological resources is increasingly prominent.

Digital literacy is essential for students in the current context, where Digital Information and Communication Technologies (DICT) have significantly transformed the ways in which we read, interpret, write, collaborate, and distribute information. In addition to traditional reading and writing skills, it is crucial that students understand themselves as part of a digital culture, actively participating in the real world in a virtual setting (Azevedo, et al., 2018). Preparing students for the challenges and opportunities of the present, promoting a more inclusive education, and adapting to technological demands are also the responsibility of educational institutions.

In the development of technological learning processes between educators and nursing students, several difficulties are faced, especially related to structural aspects, such as access to technologies (hardware, software, and connectivity). In addition, the challenge of dependency between students and teachers stands out, a legacy of a traditional teaching model that does little to encourage innovation, from basic education to higher education (Carneiro et al., 2021). In recent years, challenges have been faced by educators and nursing students during the educational journey, and this context has provoked several reflections, resulting in changes in methodologies and the incorporation of technological tools for teaching (Moreira & Tonon, 2021).

Characterizing our group of students in generations, we can mention the three found: Generation X, people born between 1964 and 1977; Generation Y, those born between 1978 and 1994 (Santos et al., 2011); and Generation Z, born after 1994, also known as “digital natives” (Iorgulesco, 2016). There are different ways of categorizing generations, but all of them are intrinsically linked to shared life experiences and the historical context in which they are inserted (Mannhein, 1952). The meeting of generations is challenging and demands pedagogical flexibility from educators, promoting interaction between them and looking for ways of learning on technological platforms are resources that should be better explored in the future of health education, even “digital natives” are limited in the use of resources that go beyond mobile tools, this realization was noted during the implementation of the techno-pedagogical proposal.

The first immersion in the museum after all the students were logged in was guided by the teacher. The virtual museum was created with internal and external spaces. The internal spaces included the entrance hall with a poster welcoming visitors. This space was the starting point for all the avatars to begin exploring the interactive environments, as well as providing initial guidance from the teacher and leading the guided tour. Figure 1 shows the entrance hall to the museum in the metaverse, the starting point for the immersion.

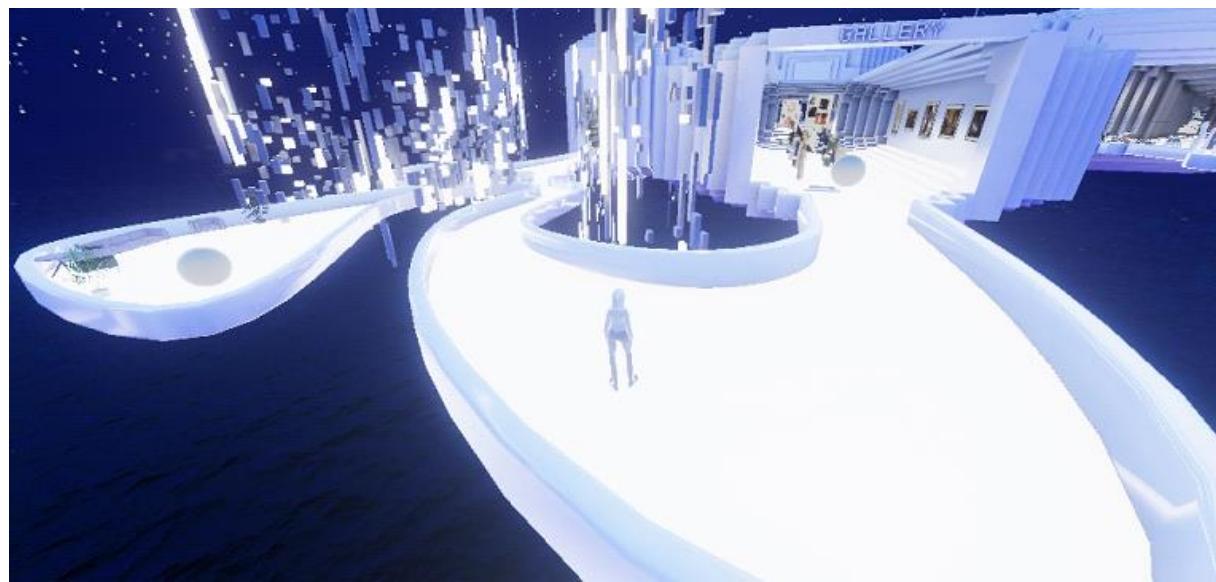
Figure 1: Entrance hall of the metaverse.



Source: Created by the authors.

The Trilhas da Enfermagem (Nursing Trails) and O Cuidar Ancestral: Mâos que Cuidam (Ancestral Caring: Caring Hands) galleries, the Hospital Fair Lounge, and an Auditorium for presentations. The external spaces for interaction were composed of suspended walkways connected to the museum's rooms and auditorium. A demonstration of the futuristic outside environment is shown in Figure 2.

Figure 2: Outside environment of the metaverse.



Source: Created by the authors.

Communication was established through the use of headsets with microphones. The first room to visit was “Trilhas da Enfermagem” (Nursing Trails). This space brought to life the forerunners of global and Brazilian nursing, Florence Nightingale and Ana Néri respectively. The story of these two nurses is told through paintings on the wall of the room. By clicking on each work, students can learn about the lives of each and their contributions. The actions of these women are the basis of contemporary nursing care. After appreciating the exhibition, the students were exposed to a reflection to close the

activity. They answered a questionnaire about current nursing and 19th-century nursing, connecting the role of women in society throughout history. Figure 3 shows the Nursing Trails room with the works on the wall and the clothing exhibition in the center.

Figure 3: Trilhas da Enfermagem (Nursing Trails) room.



Source: Created by the authors.

In the second nursing history lesson within the metaverse, we used the same resources as in the previous lesson. We returned to the museum room: Trilhas da enfermagem. By exploring the center of the room, the students were able to contemplate the history of care through nursing attire. By clicking on each item of clothing, they were able to see a card with information about the period and how the clothing related to professional identity and the time frame of the profession. The students' interaction with the nursing costumes is shown in Figure 4.

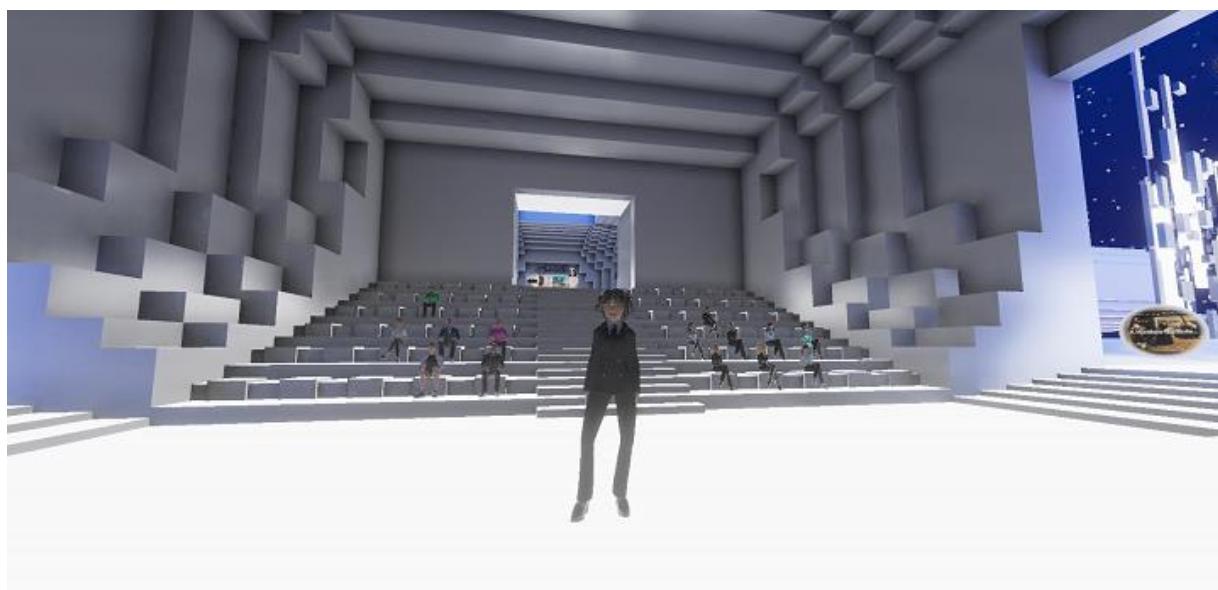
Figure 4: Trilhas da Enfermagem room.



Source: Created by the authors.

The students were then taken to the auditorium for a lecture on health institutions: organizational structure, services, and the systematization of nursing care at the different levels of care. The students were able to watch the slide show on the virtual auditorium's screen while the lecturer conducted the class with her avatar. The dialogues during the presentation were provided by headphones with microphones. Once the presentation was over, students were taken to the museum's outdoor area, where they could watch a 360° short film about Ana Nery, via YouTube (Somos Enfermagem TV, 2020). Figures 5 and 6 show the auditorium with the students immersed and the teacher explaining the proposed theme.

Figure 5: Auditorium with students and teacher present in class



Source: Created by the authors.

Figure 6: Teacher and slide presentation in the dialogued class



Source: Created by the authors.

On the third day of class, the students were immersed in the metaverse and found it easier to navigate, even for those who needed more attention in the initial activities related to the technology being worked on. The activities began with the external route on the suspended walkways, where there were didactic challenges on the content previously worked on. The

activities were chosen by the students in a free and exploratory way, through portals. Activities included: a quiz on the history of pioneering nurses; the history of health institutions in Brazil; and a hangman's game on health systems. The purpose of these activities was to review the content by means of retention exercises.

Afterward, the students were taken to the Lounge, which housed the Feira Hospitalar (Hospital Fair). The space was made up of 3D objects, mentioning the history and contemporaneity of common everyday items in the healthcare profession. The table of honor in the hall was a symbolic lamp in the center representing the nursing profession, to the left was a first aid box representing care and to the right was an old book referring to the knowledge and wisdom of the profession. In the background, a banner of Florence Nightingale with a lighted lamp in her left hand, known as the "Lady with the Lamp", in the classic scene of her nightly rounds of the wards attending to the wounded. Nursing Week is celebrated in Brazil between May 12th and 20th. The date is a tribute to the birth of Florence Nightingale and the death of Ana Néri, two iconic figures in nursing. These commemorative dates were discussed with the students and their perception of the historical influence of caring was welcomed. Figure 7 shows the Lounge's "Mesa de Honra (Table of Honor)" and its poetic symbolism for the nursing profession.

Figure 7: "Mesa de Honra (Table of Honor)" in the Feira Hospitalar (Hospital Fair) Lounge



Source: Created by the authors.

To end the lesson, the students watched a presentation using the video "Health Systems in the World", via YouTube (BRS Explica, 2015), available on a portal inside the AUDITORIUM. Next, each student researched a health system from a country of their interest on the web and then discussed its characteristics in plenary, comparing differences and similarities with the Sistema Único de Saúde (SUS) (Unified Health System) in Brazil.

At the last meeting, students visited the Galeria Enfermagem Ancestral: Mão que Cuidam (Ancestral Nursing Gallery: Caring Hands!). To begin this last phase of immersion in the Metaverse, the classroom was arranged with diffusers and lavender essential oil. This ancient herb was chosen because of its relaxing properties and also to refer to ancestry, the act of caring and healing. In the virtual space, the presence of Indigenous and black women who have made history in nursing and care was contemplated, and the students were able to access the story of each character and their cultural identity through works displayed on the side walls of the room. Culturally indigenous care practices remain fundamental to the health of native peoples, as they involve knowledge passed down orally through the generations and a holistic approach that integrates intuition and spirituality (Andrade & Souza, 2016). Similarly, in African ancestral care, spiritual balance in health is the central

perspective, praising convictions, respect, and individual and collective knowledge to recognize human diversity, and prejudice-free remain alive in the precepts of the community (Lima et al., 2024).

To incorporate the feeling of cultural belonging, we set the gallery to the sound of the song “Nasci para sonhar e cantar” (I was born to dream and sing), by Dona Ivone Lara, a black samba singer and nurse engaged in mental health issues. The immersion was only possible due to the contemplation of sensory stimuli promoted by hearing, touch, smell, and sight. Reflections were proposed on elitist concepts of Brazilian society and the Afro-descendant population. Figure 8 shows the Ancestry Room with works displayed on the wall and icons of indigenous and African culture in the center.

Figure 8: Galeria O Cuidar Ancestral: Mãos que Cuidam (Ancestral Caring Gallery: Caring Hands)!



Source: Created by the authors.

In the 1920s and 1930s, in the context of Brazilian history, discourses on the professionalization of nursing characterized blacks as ignorant and incapable of the “noble profession”. The movement to whiten and elitize nursing reinforced racial segregation and widened inequality in access to education and improvements in living conditions (Miasato et al., 2024).

The song in the last meeting was appropriately chosen for its ability to increase emotional sensitivity, helping to recognize the emotions expressed in the tune, which is linked to emotional intelligence and the ability to understand one's own emotions and those of others (Hallam, 2010). Music has historically been used in nursing, and its therapeutic properties go beyond the physical and psychological ones (Franzoi et al., 2016). Within this context, we looked for an emblematic work, a symbol of resistance and hope. In her works, Dona Ivone Lara brought Afro culture closer and broke down barriers in a society marked by prejudice. *Nasci para sonhar e cantar* (I was born to dream and sing) expresses her love for life and her determination to pursue her dreams even in the face of adversity. The intention behind this melody was to evoke various feelings in the listener, such as overcoming pain, finding joy, living love intensely, and appreciating every moment of life.

The virtual end of the visit could be experienced in the entrance hall of the metaverse. When the students said goodbye, the popular strategy, which is used at major events, was the Photo Party, a place where each student had their individual or group photo taken to register their participation, thus creating not only a virtual memory but also a memory of learning. The register is shown in Figure 9.

Figure 9: Photo Party.



Source: Created by the authors.

To end the class and close the immersion in the metaverse, students worked with holistic concepts, referring to ancestry, and each student could make a foot soak as a symbol of caring. In the early days, this therapeutic method was widely used in the care and recovery process. On a table, individual containers of coarse salt, chamomile flowers, and calendula are placed. By making sachets for personal use, each student was encouraged to think positively about care and well-being, which are inherent principles of the profession. Modern education makes it possible to connect historical subjects with digital resources, arousing curiosity about the past and interacting with tools for learning about the future.

The virtual museum in the metaverse promoted reflections on visibility for the nursing profession, highlighting the challenges faced by black nurses throughout history, especially with regard to devaluation, prejudice, and underemployment. Nursing, often associated with subordinate roles and historically excluded from dominant narratives, has suffered from the exclusion of significant contributions by black women in books and historical records. The wing dedicated to these professionals in the museum sought to rescue and recognize these stories, demonstrating how their work was essential to the development of care practice and the formation of a more inclusive professional identity.

Learning is an intrinsically individual process, where each person develops their skills and knowledge in a unique way (Altenmüller, 2003), which is why there was a need for various elements in the immersion of the participants, all of whom were previously selected based on their historical belonging to the topic. This approach was intended to be flexible and promote full and effective development. Recognizing these learning differences is essential to creating educational strategies that meet the needs of all students, respecting the particularities of each generation, and stimulating creativity. In this way, it is possible to expand the imagination and provide a more inclusive and personalized education.

The group of students, made up of individuals aged between 18 and 54, brought varied perspectives to the debate, enriching the understanding of the historical and contemporary challenges faced by nursing. This age diversity allowed for broad and inclusive discussions, where personal experiences and cultural contexts were shared, broadening empathy and collective learning.

The history of nursing is marked by a profile of individuals initially selected by society to perform care functions, often linked to a context of servitude and low value. This reality becomes even more evident when one considers the lack of formal recognition of the contributions of black nurses in traditional teaching materials.

Historically, attempts were made to strategically avoid admitting black women to nursing schools, as they were considered unfit, inferior, primitive, and subhuman, based on the ideas disseminated by eugenics and scientific racism. The dominant idea was that a nurse could be an elite, middle-class, or even poor woman, but it was not acceptable for her to be black (Campos, 2012).

The virtual museum proposed an educational movement to discuss these gaps, promoting classroom debates that addressed issues such as professional devaluation, structural prejudice, and the impacts of these dynamics on the current profession. This approach allowed students to reflect on how education can be a powerful tool for deconstructing prejudices and building a more equitable and just nursing practice. Reinforcing that the inclusion of these narratives in nursing education is fundamental to forming professionals who will be better aware and prepared to act in a diverse and plural society.

4. Final Considerations

The history of nursing, traditionally told from a Eurocentric and hospital-centric perspective, gains new layers of meaning when revisited from the perspective of the metaverse. The construction of the virtual museum allowed students not only to learn about the profession's historical milestones but also to experience the narrative in an immersive, interactive, and critical way. The metaverse technology provided a three-dimensional environment that rescued the legacy of emblematic nursing figures, expanding the students' cultural repertoire and promoting reflections on the role of black women in the construction of care. The immersive education provided by the metaverse demonstrated that when history is told from different perspectives, it becomes possible to understand the challenges, achievements, and social impacts of the profession. This educational model offers not just cognitive learning, but also a transformative experience that combines academic knowledge and sensory experience. By entering a space that reconstructs nursing scenarios over time, students were encouraged to reflect on how the profession has evolved and how gender and racial inequalities have shaped its development.

As well as a pedagogical advance, this approach also represented a leap forward in the social and digital inclusion of the students. The inclusion of technological resources enabled students from different generations, with different levels of familiarity with digital tools, to interact on an equal footing, overcoming pre-existing limitations. Digital accessibility was a central concern in the project, ensuring that all participants could freely explore the virtual space and build a relationship of belonging with the history they were learning. The experience also reinforced the importance of interdisciplinarity in education, by bringing together technology, social sciences, and health to develop an innovative teaching proposal. The metaverse thus proved to be fertile territory for teaching practices that not only transmit content but also encourage critical thinking, intellectual autonomy, and social engagement. By immersing themselves in an environment that rescues invisible memories and highlights historically marginalized characters, the students were able to experience nursing from a fairer and more inclusive perspective. Thus, it is clear that it is possible to educate with sensitivity, bringing the intersectionality between history, technology, and empowerment to the center of the debate.

Despite the progress made using the metaverse as a pedagogical tool, some limitations were identified throughout the experience. The first barrier encountered was the technological issue, as carrying out the activity required high-performance equipment, a stable internet connection, and the students' prior familiarity with digital resources since they did not have sufficient technological skills, which required additional teacher support and extra time to adapt to the virtual environment. Another limiting aspect was the difficulty in providing a fully inclusive experience for people with disabilities since digital platforms still have accessibility barriers that need to be improved. For future studies, we suggest expanding the proposal with new engagement strategies, such as the use of augmented reality and artificial intelligence to create more dynamic and accessible interactions. In addition, it is recommended to integrate active methodologies, such as problem-based learning

(PBL) and digital storytelling, to deepen the pedagogical approach. Ultimately, this study paves the way for further research into the impact of immersive technologies on professional training and the promotion of social equity in education.

References

Alcántara, J. C., Tasic, I., & Cano, M.-D. (2024). Enhancing digital identity: Evaluating avatar creation tools and privacy challenges for the metaverse. *Information*, 15(10), 624. <https://doi.org/10.3390/info15100624>

Altenmüller, E. O. (2003). How many music centres are in the brain? In I. Peretz & R. Zatorre (Eds.), *The cognitive neuroscience of music* (pp. 346–353). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780198525202.003.0022>

Andrade, J. T., & Sousa, C. K. S. (2016). Práticas indígenas de cura no Nordeste brasileiro: Discutindo políticas públicas e intermedicalidade. *Anuário Antropológico*, 41(2), 179–202. <https://doi.org/10.4000/aa.2581>

Azevedo, D. S., Pereira, A. M., Silva, L. R., & Oliveira, R. F. (2018). Letramento digital: Uma reflexão sobre o mito dos “nativos digitais”. *RENOTE*, 16(2), 615–625. <https://doi.org/10.22456/1679-1916.89222>

Barros, A. M. D. B. (2024). Manual de trabalhos acadêmico-científicos: relato de experiência. Nova UBM. <https://www.ubm.br/explorer/arquivos/manual-ubm-relato-de-experi%C3%A3oAAnzia.pdf>

Brasil. Ministério da Igualdade Racial. (2025). Protocolo de Igualdade Racial. https://www.gov.br/igualdaderacial/pt-br/assuntos/copy2_of_noticias/mir-lanca-projeto-protocolo-de-igualdade-racial

BRS Explica. (2015, 1º de novembro). Sistemas de saúde no mundo [Vídeo]. YouTube. <https://www.youtube.com/watch?v=iLbVJQi1zho>

Campos, P. F. S. (2012). História social da enfermagem brasileira: Afrodescendentes e formação profissional pós-1930. *Revista de Enfermagem Referência*, 3(6), 167–177. <https://www.index-f.com/referencia/2012/r36-167.php>

Carneiro, P. R. C., Santos, L. M., & Oliveira, R. T. (2021). O ensino de enfermagem e os desafios do uso de tecnologias remotas em tempos de pandemia do coronavírus (COVID-19). *Brazilian Journal of Development*, 7(1), 8667–8682. <https://doi.org/10.34117/bjdv7n1-587>

Castro, M. M. M., & Maciel, C. (2023). Levantamento de possibilidades no metaverso baseado em uma experiência didática com a temática legado digital pós-morte: Formando estudantes-pesquisadores. In *Anais do 31º Workshop sobre Educação em Computação* (pp. 200–211). Sociedade Brasileira de Computação. <https://doi.org/10.5753/wei.2023.230472>

Conselho Federal de Enfermagem. (2025). Museu Nacional de Enfermagem Anna Nery (MuNEAN). <https://munean.cofen.gov.br>

De Souza, R. L. L., Maciel, C., & Nunes, E. P. S. (2021). Inspeção semiótica no sistema do Metahuman Creator: Avatares em foco. In *Anais da 21ª Escola Regional de Informática de Mato Grosso* (pp. 77–83). Sociedade Brasileira de Computação. <https://doi.org/10.5753/eri-mt.2021.18228>

Díaz, J. E. M. (2020). Virtual world as a complement to hybrid and mobile learning. *International Journal of Emerging Technologies in Learning (iJET)*, 15(22), 267–274. <https://doi.org/10.3991/ijet.v15i22.14393>

Franzoi, M. A. H., Gauer, G. J. C., & Cruz, R. M. (2016). Intervenção musical como estratégia de cuidado em enfermagem a crianças com transtorno do espectro do autismo em um centro de atenção psicossocial. *Texto & Contexto - Enfermagem*, 25(1), e123456. <https://doi.org/10.1590/0104-070720160001020015>

Gaya, A. C. A. & Gaya, A. R. (2018). Relato de experiência. Editora CRV.

Hallam, S. (2010). The power of music: Its impact on the intellectual, social and personal development of children and young people. *International Journal of Music Education*, 28(3), 269–289. <https://doi.org/10.1177/0255761410370658>

Iorgulescu, M. C. (2016). Generation Z and its perception of work. *Cross Cultural Management Journal*, 18(1), 47–54. <https://ideas.repec.org/a/cmj/journl/y2016i9p47-54.html>

Lampropoulos, G., & Kinshuk. (2024). Virtual reality and gamification in education: A systematic review. *Educational Technology Research and Development*, 72, 1691–1785. <https://doi.org/10.1007/s11423-024-10351-3>

Lara, I. (2001). *Nasci pra sonhar e cantar [Canção]*. Natasha Records.

Lima, R. F., Silva, M. A., & Santos, J. C. (2024). Relações de cuidado na comunidade de matriz africana: Uma abordagem através da educação popular em saúde. *Revista África e Africanidades*, 16(49), 90–101. <https://africaeafricanidades.com.br/edicao-49/>

López, G. A. M., Chaux, H. R., & Alvarez, F. A. C. (2022). The university in the metaverse: Proposal of application scenarios and roadmap model. In *2022 XV Technologies Applied to Electronics Teaching Conference* (pp. 1–9). IEEE. <https://ieeexplore.ieee.org/document/9840630>

López-Belmonte, J., Pozo-Sánchez, S., Moreno-Guerrero, A. J., & Lampropoulos, G. (2023). Metaverso na educação: Uma revisão sistemática. *Revista de Educación a Distancia (RED)*. <https://doi.org/10.6018/red.511421>

Mannheim, K. (1952). The problem of generations. In P. Kecskemeti (Ed.), *Essays on the sociology of knowledge* (pp. 276–322). Routledge & Kegan Paul.

Miasato, F. A., Souza, E. R., & Silveira, L. M. (2024). “A raça de amanhã”: Racismo e eugenia na profissionalização da enfermagem brasileira. *Trabalho, Educação e Saúde*, 22, e02901258. <https://doi.org/10.1590/1981-7746-ojs2901>

Moreira, C. L., & Tonon, T. C. A. (2021). Challenges of students concluding the nursing bachelor's course, before the supervised internship and the pandemic of the COVID-19. *Research, Society and Development*, 10(7), e25710716640. <https://doi.org/10.33448/rsd-v10i7.16640>

Mussi, R. F. F., Flores, F. F., & Almeida, C. B. (2021). Pressupostos para a elaboração de relato de experiência como conhecimento científico. *Práxis Educacional*, 17(48), 60–77. http://educa.fcc.org.br/scielo.php?script=sci_arttext&pid=S2178-26792021000500060

Pereira, A. S. et al. (2018). Metodologia da pesquisa científica. [free ebook]. Santa Maria: Editora da UFSM.

Rasyida, R., Nurdin, E. A., & Rasim, R. (2023). Pembelajaran berbasis metaverse – Virtual reality menggunakan spatial.io dengan model discovery learning untuk meningkatkan minat dan pemahaman siswa. *Jurnal Pendidikan Tambusai*, 7(2), 15875–15882. <https://doi.org/10.31004/jptam.v7i2.8880>

Ren, J., Tan, Y. H., & Guo, J. (2025). Scientific mapping of research on metaverse in education. *International Journal of Technology in Education*, 8(1), 1–21. <https://doi.org/10.46328/ijte.986>

Rysuľová, A. (2024). Utilization of metaverse and the potential role in education. *Deleted Journal*, 620–628. <https://doi.org/10.34135/mmidentity-2024-62>

Santos, C., Arinte, M., Diniz, M., & Dovigo, A. (2011). O processo evolutivo entre as gerações X, Y e Baby Boomers. *SEMEAD*.

Somos Enfermagem TV. (2020, 9 de janeiro). QUANDO NASCE UMA HEROÍNA - A história de Anna Nery - Filme VR 360º [Vídeo]. YouTube. <https://www.youtube.com/watch?v=dHQSYTSd6rQ>

Yeganeh, L. N., Fenty, N. S., Chen, Y., Simpson, A., & Hatami, M. (2025). The Future of Education: A Multi-Layered Metaverse Classroom Model for Immersive and Inclusive Learning. *Future Internet*, 17(2), 63. <https://doi.org/10.3390/fi17020063>