

Metaverse adventures into libraries: what librarians and information users need to know

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Abstract

Purpose – The study explores the transformative potential of the metaverse in libraries, highlighting opportunities for innovative patron engagement and challenges such as digital equity, privacy concerns, and accessibility barriers.

Design/methodology/approach – This study employed an interpretive content/document analysis approach, drawing insights from diverse literature sources including Scopus, Web of Science, and Google Scholar.

Findings – The findings indicate that through the integration of immersive technologies like virtual reality (VR) and augmented reality (AR), libraries can enrich their offerings and reach a broader audience. However, addressing challenges in libraries requires proactive measures, including bridging the digital divide and implementing inclusive design practices. Furthermore, cultivating metaliteracy skills among librarians and information users is essential to navigating the complexities of the metaverse responsibly.

Originality/value – The study's originality lies in its comprehensive exploration of the implications of the metaverse for libraries and information users. Thus, exploring the nexus of immersive technologies, digital equity, and the evolving role of libraries, the research provides a nuanced understanding of the challenges and opportunities presented by the metaverse. The value outlines the key strategies for libraries to thrive in the metaverse by emphasizing the integration of immersive technologies, enhancing digital literacy, fostering collaborative partnerships, prioritizing accessible design, investing in research and innovation, and advocating for inclusive policies, the study equips libraries with a roadmap to fulfill their mission of providing equitable access to information and fostering lifelong learning in the digital age. The insights from the study will inform



the strategic planning and decision-making of library administrators, policymakers, and information professionals as they navigate the transformative potential of the metaverse.

Keywords Metaverse, Adventure, Libraries, Metaliteracy, Digital literacy, Library resources

Paper type Viewpoint

Introduction

In the age of rapidly advancing technology, the concept of the metaverse has emerged as a tantalizing frontier, blurring the lines between physical and digital realities. For libraries and information users, this evolving digital landscape holds both promise and perplexity. As traditional notions of library services continue to adapt to the digital age, understanding the implications of the metaverse becomes paramount (Oladokun *et al.*, 2023a). Libraries have long served as bastions of knowledge and community hubs, fostering learning, exploration, and connection. However, the rise of the metaverse introduces a new dimension to these venerable institutions (Tella *et al.*, 2023). It beckons librarians and information users alike to embark on a journey into uncharted territories, where virtual realms intertwine with the familiar stacks of books and quiet reading corners. In the quest to understand the metaverse adventures in libraries, looking into the transformative potential of this emerging technology is very crucial. Ajani *et al.* (2024) stressed that from immersive storytelling experiences to virtual reference desks, the metaverse offers libraries unprecedented opportunities to engage with patrons in innovative ways. By embracing virtual reality (VR), augmented reality (AR), and other immersive technologies, libraries can enrich their offerings and reach a wider audience than ever before.

Thus, amid the excitement of this digital frontier, challenges loom large on the horizon. Privacy concerns, digital equity issues, and the need for robust digital literacy skills present formidable obstacles to navigate (Kayyali, 2024). As librarians and information users venture into the metaverse landscape, they must grapple with these complexities and strive to uphold the core principles of accessibility, inclusivity, and intellectual freedom. Against these backdrop of opportunity and challenge, a question came to mind: *What role will libraries play in the metaverse adventure, and how can librarians and information users harness its potential while mitigating the risks it poses?* As a result, this study seeks to explore these pressing questions, by providing insights and guidance for librarians and information users alike as they embark on their metaverse adventures. Through a careful exploration of current trends, case studies, and best practices, this study aims to equip librarians and information users with the knowledge and tools they need to navigate the metaverse with confidence and foresight.

Be that as it may, this study was driven by an interpretive content/document analysis approach, aiming for a thorough understanding through a deep dive into literature sourced from diverse databases such as Scopus and Web of Science. This methodological choice was deliberate, ensuring a comprehensive examination that incorporates varied perspectives and insights. Through interpretive content/document analysis, each textual piece was meticulously scrutinized and interpreted, enabling a nuanced comprehension of the subject matter. The inclusion of reputable databases like Scopus, Web of Science, and Google Scholar not only bolsters the credibility and reliability of the findings but also enriches the exploration with a wide array of scholarly perspectives. Therefore, explorings a spectrum of current research papers, articles, and publications, this methodology fosters a holistic exploration of the topic, providing valuable insights into its multifaceted dimensions.

Literature review

Understanding the metaverse adventure in libraries

The term “metaverse” has been making waves in the realms of technology and virtual reality, igniting curiosity and sparking imaginations about the possibilities beyond our current

digital landscape (Gwynne, 2023). Essentially, the metaverse can be visualized as a shared virtual realm where individuals interact with each other and digital elements, often in real-time, utilizing immersive technologies like virtual reality (VR) and augmented reality (AR) (Dincelli and Yayla, 2022). This vibrant and interconnected digital sphere transcends the limitations of individual virtual environments, offering users an experience akin to navigating the physical world, albeit in a digital realm (Golf-Papez *et al.*, 2022). For libraries and their patrons, the emergence of the metaverse marks the dawn of a new era defined by exploration and engagement. Traditionally, libraries remained as bedrocks of knowledge, nurturing learning and discovery through their extensive book collections, resources, and community programs (Ajani *et al.*, 2023). However, as society undergoes its digital transformation, libraries began to evolve to meet the evolving needs and expectations of their visitors. No doubt, the metaverse presents libraries with a unique opportunity to extend their influence and significance in the digital age by providing immersive and interactive experiences that transcend physical boundaries (Noh, 2023).

At its essence, the significance of the metaverse for libraries and information users lies in its potential to revolutionize how users access, interact with and generate information (Tella *et al.*, 2023). Therefore, embracing immersive technologies and virtual environments, libraries have reimagine themselves as dynamic hubs of exploration and learning. Here, users can thread on virtual journeys, participate in interactive workshops, and collaborate with others in unprecedented ways (Papadopoulou *et al.*, 2024). Furthermore, the metaverse opens up avenues for accessing digital collections, conducting research, and engaging in cultural events from anywhere in the world, democratizing access to information and resources (Maier and Weinberger, 2024). In today's rapidly evolving digital landscape, libraries are embracing the metaverse as a catalyst for innovation and transformation. These pioneering institutions are reimagining traditional library services by harnessing immersive technologies to create dynamic and engaging experiences for patrons. From virtual replicas of physical library spaces to interactive storytelling sessions in virtual reality, libraries are pushing the boundaries of what is possible in the digital realm.

One such example is the Harvard Library Innovation Lab's Library Test Kitchen, situated in the virtual world of Second Life. Here, librarians ensure users explore a virtual replica of the library's physical space, experimenting with new ideas and technologies in an immersive environment (Abels *et al.*, 2018). Similarly, the Los Angeles Public Library has launched a VR Book Club, where readers can come together in a virtual space to discuss books and interact with authors, fostering a sense of community and social connection (Szabo, 2022). In addition to virtual reality experiences, libraries are also utilizing augmented reality to enhance learning and engagement. The Toronto Public Library, for instance, has developed AR scavenger hunts that guide users through library spaces, encouraging exploration and discovery while promoting literacy and engagement (Kneareem *et al.*, 2021). Meanwhile, the New York Public Library has embraced the virtual world of Minecraft, creating "NYPLarcade" where users can participate in storytelling sessions, workshops, and other events centered around literature and creativity (Nicholson, 2019).

However, the use of Minecraft in libraries has been explored in various studies, highlighting its potential for creativity, storytelling, and community building (Cilauro, 2015; Gauquier and Schneider, 2013). The game's open digital world can spark imagination and creativity, particularly in young minds (Lewis Ellison, 2017). It has also been found to be a valuable tool for community building, with the North Melbourne Library successfully implementing a collaborative Minecraft Gaming Day (Cilauro, 2015). The game's popularity among teens and its ability to bring diverse groups together make it a suitable platform for library programs (Gauquier and Schneider, 2013). The potential for Minecraft to support literacy building and social inclusion has been recognized. Notably, libraries are leveraging the metaverse to facilitate collaborative research and scholarly endeavors. The University of California, Berkeley Library

has established a virtual research space in Mozilla Hubs, providing scholars and researchers with a platform to collaborate, share resources, and access digital collections remotely (Pereira *et al.*, 2021). These virtual environments offer new opportunities for collaboration and knowledge-sharing, transcending the limitations of physical space.

As libraries continue to explore the possibilities of the metaverse, they are redefining their role as hubs of knowledge and community engagement in the digital age. By embracing immersive technologies and virtual environments, libraries are not only expanding access to information and resources but also fostering creativity, collaboration, and lifelong learning. As the metaverse evolves, libraries will undoubtedly remain at the forefront of innovation, shaping the future of information access and interaction for generations to come.

Potential benefits for libraries and users

Libraries stand at the precipice of transformation with the advent of the metaverse, a digital realm offering boundless opportunities to enhance library services and redefine user experiences. By integrating immersive technologies, libraries can revolutionize traditional services, providing patrons with unprecedented access to resources and knowledge. Virtual reference desks, once confined to physical library spaces, now transcend geographical limitations through the metaverse. Librarians can offer personalized assistance to users in real-time, guiding them through digital collections and answering inquiries with the aid of immersive technologies like virtual reality VR and AR (Hannah *et al.*, 2019). This seamless access to expert guidance enhances user engagement and facilitates collaborative problem-solving across distances. Immersive learning experiences take center stage in the metaverse-enabled library environment. Through VR simulations and interactive environments, users can embark on virtual journeys, explore historical landmarks, conduct science experiments, or participate in language-learning sessions (Damaševičius and Sidekerskienė, 2024). These immersive experiences cater to diverse learning styles, fostering deeper understanding and engagement among users of all ages.

Virtual meetings and collaborative spaces offer a dynamic alternative to traditional library gatherings. Participants can convene in shared virtual environments, interacting with each other through avatars and collaborating on projects in real-time (Falloon, 2010). These virtual meetings transcend physical barriers, enabling individuals to attend from anywhere with an internet connection, thereby promoting inclusivity and accessibility. No doubt, the metaverse presents a myriad of innovative opportunities for information users to access library resources and services, transcending the limitations of physical location. Here are some ways in which the metaverse has revolutionized access to library resources:

- (1) *Virtual Libraries:* Libraries can create virtual replicas of their physical spaces within the metaverse, allowing users to explore digital collections, browse shelves, and access resources from anywhere with an internet connection. Through immersive technologies like virtual reality (VR) and augmented reality (AR), users can navigate virtual library spaces and interact with digital objects as if they were in a physical library (Falloon, 2010).
- (2) *Digital Collections:* The metaverse enables libraries to digitize their collections and make them accessible to users worldwide. By hosting digital collections in virtual environments, libraries can offer users the ability to browse, search, and access resources remotely, regardless of their physical location. This expands access to rare and unique materials, ensuring that users can engage with library resources regardless of geographical constraints (Daradkeh, 2023).
- (3) *Virtual Reference Services:* Librarians can provide reference services and assistance to users through virtual channels within the metaverse. Virtual reference desks,

chatbots, and interactive avatars can guide users through research inquiries, provide recommendations, and offer assistance in real-time, enhancing access to expert guidance and support regardless of physical distance (Garlinska *et al.*, 2023).

- (4) *Collaborative Research Spaces*: The metaverse offers collaborative research spaces where scholars and researchers can gather to collaborate on projects and access digital resources remotely. Libraries can host virtual research environments equipped with tools for collaboration, data analysis, and resource sharing, enabling users to work together seamlessly across different locations (Gul and Bano, 2019).
- (5) *Educational Programs and Events*: Libraries can host virtual workshops, lectures, and cultural events within the metaverse, reaching audiences worldwide. Virtual events offer the opportunity for users to engage with authors, attend lectures, and participate in discussions from the comfort of their own homes, expanding access to educational and cultural programming (Abdelmalak and Parra, 2016).

Seamlessly, the metaverse offers a transformative platform for libraries to expand access to resources and services in innovative ways. By leveraging immersive technologies and virtual environments, libraries can ensure that information users can engage with library resources and services regardless of physical location, fostering inclusivity, accessibility, and lifelong learning.

Challenges and considerations

As libraries dive into the immersive world of the metaverse, they're not just encountering opportunities, but also navigating a landscape dotted with potential challenges. Among these hurdles, three significant ones stand out: digital equity, privacy concerns, and accessibility barriers. Picture this: in a world where virtual reality experiences and interactive environments are becoming the norm, not everyone has the same access to the technology needed to fully participate. This digital divide, rooted in differences in internet access, device ownership, and digital literacy skills, threatens to deepen existing inequalities. To bridge this gap, libraries in the advanced world are stepping up, offering computer access, internet connectivity, and training programs to ensure that everyone has a fair chance to explore the metaverse (Wang *et al.*, 2022). But it's not just access to technology that's at stake; it's also about protecting users' privacy in this digital realm. With vast amounts of personal data being collected within virtual environments, there's a growing concern about how that information is used and who has access to it.

Libraries are taking a proactive approach, implementing strict privacy policies, obtaining explicit consent for data collection, and empowering users with knowledge about their rights and risks in the metaverse (Dwivedi *et al.*, 2022). And let's not forget about accessibility. For individuals with disabilities, navigating virtual spaces can present unique challenges. Libraries are advocating for inclusive design practices, ensuring that virtual environments are equipped with features like text-to-speech, screen readers, and alternative navigation options to accommodate users of all abilities. By promoting accessibility standards and providing training to developers, libraries are working to ensure that the metaverse is a welcoming and inclusive space for everyone (Creed *et al.*, 2024). In the journey through the metaverse, libraries are not just opening doors to new possibilities; they're also building bridges, advocating for fairness, privacy, and inclusivity every step of the way. As they continue to navigate these challenges, libraries remain steadfast in their commitment to creating a metaverse that's accessible, safe, and beneficial for all who venture into its virtual realms.

Resources and tips for the cultivation of metaliteracy skills

Metaliteracy skills are essential for both librarians and information users as they explore the complexities of the metaverse adventure libraries. In this immersive digital landscape, where

information of various formats is in abundance and constantly evolving, metaliteracy skills enable individuals to critically evaluate, create, and navigate digital content effectively. [Eneh et al. \(2024\)](#) stressed that for librarians, metaliteracy skills empower them to curate and disseminate accurate, reliable information within virtual library environments. By understanding how information is produced, shared, and consumed in the metaverse, librarians can guide users to navigate digital resources responsibly and ethically. For information users, metaliteracy skills provide the tools and strategies needed to navigate the vast and sometimes overwhelming digital landscape of the metaverse ([Oladokun et al., 2023b](#)). From evaluating the credibility of online sources to understanding the implications of sharing personal information in virtual environments, metaliteracy skills enable users to make informed decisions and engage with digital content safely and critically. Therefore, to develop metaliteracy competencies relevant to metaverse technologies, librarians and users can explore a range of these resources and tips:

- (1) *Online Courses and Workshops*: Platforms like Coursera, edX, and LinkedIn Learning offer courses and workshops on digital literacy, media literacy, and information literacy skills. These courses cover topics such as evaluating online information, digital citizenship, and privacy and security in virtual environments.
- (2) *Librarian Professional Development*: Professional organizations such as the American Library Association (ALA) and the International Federation of Library Associations and Institutions (IFLA) offer resources and training opportunities for librarians on topics related to digital literacy and metaliteracy ([Chen, 2023](#)). Webinars, conferences, and workshops provide librarians with practical strategies and tools for integrating metaliteracy skills into their library services.
- (3) *Online Resources and Guides*: Websites like Digital Literacy Now and the Media Wise initiative offer a wealth of resources and guides on digital literacy and media literacy skills. These resources cover topics such as fact-checking, online privacy, and responsible digital citizenship, providing individuals with practical tips and strategies for navigating the digital landscape effectively.
- (4) *Collaborative Learning Communities*: Joining online communities and discussion forums focused on digital literacy and media literacy can provide individuals with opportunities to learn from and collaborate with others who share similar interests and goals. Platforms like Reddit, Twitter, and Facebook host groups and communities dedicated to digital literacy and media literacy topics, where individuals can share resources, ask questions, and engage in discussions.
- (5) *Interactive Tutorials and Simulations*: Platforms like Mozilla's Web Literacy Map and Google's Be Internet Awesome offer interactive tutorials and simulations that teach digital literacy and internet safety skills in an engaging and immersive format. These resources allow users to practice skills such as identifying fake news, protecting personal information online, and evaluating website credibility.
- (6) *Gamified Learning Platforms*: Gamified learning platforms like Digital Compass and CyberPatriot provide interactive games and challenges that teach digital literacy and cybersecurity skills. These platforms offer a fun and engaging way for users to develop metaliteracy competencies while navigating virtual scenarios and solving real-world problems.
- (7) *Community College and Continuing Education Programs*: Many community colleges and continuing education programs offer courses and certificates in digital literacy, media literacy, and cybersecurity. These programs provide individuals with

in-depth training and practical skills that are directly applicable to navigating the digital landscape of the metaverse.

- (8) *Open Educational Resources (OER)*: OER repositories like OpenStax and MERLOT offer a wide range of free and openly licensed digital literacy and media literacy resources, including textbooks, videos, and interactive modules. These resources can be used by educators, librarians, and individuals alike to enhance their understanding of digital literacy concepts and practices.
- (9) *Digital Citizenship Curricula*: Organizations like Common Sense Education and iKeepSafe provide comprehensive digital citizenship curricula and resources for K-12 educators, parents, and students. These curricula cover topics such as online safety, cyberbullying prevention, and responsible digital citizenship, helping individuals develop the skills and knowledge needed to navigate the digital world responsibly.
- (10) *Peer Learning and Mentoring*: Engaging in peer learning and mentoring relationships can be a valuable way to develop metaliteracy competencies. Joining or forming study groups, attending digital literacy meetups, or participating in mentorship programs can provide individuals with opportunities to learn from others, share experiences, and support one another in their digital literacy journey.

By exploring these resources and tips, both librarians and information users can strengthen their metaliteracy skills and navigate the metaverse with confidence, resilience, and ethical awareness.

Discussion of literature findings

From the extant literature it was revealed that libraries are poised to undertake a significant role in the metaverse adventure, transitioning from physical to digital realms, redefining themselves as dynamic centers of knowledge, community interaction, and immersive experiences (Ajani *et al.*, 2024). It was also revealed that librarians, as custodians of information, will play a pivotal role in curating digital collections, designing virtual spaces, and facilitating user engagement within the metaverse (Golf-Papez *et al.*, 2022). Meanwhile, as information users capitalize on the metaverse's potential by accessing resources, participating in virtual events, engaging in collaborative research endeavors becomes paramount. The literature also reveals that metaverse adventure enable the libraries to offer a spectrum of services, including virtual reference desks, interactive learning experiences, and cultural events (Noh, 2023). Through the utilization of immersive technologies such as virtual reality (VR) and augmented reality (AR), the literature revealed that librarians will craft engaging experiences that transcend physical constraints, enabling users to interact with information in innovative and enriching ways (Dincelli and Yayla, 2022).

For information users, the literature shows that metaverse presents a wealth of opportunities to access resources in virtual communities. Users can seamlessly navigate digital collections, attend virtual events, and collaborate with peers from around the globe (Papadopoulou *et al.*, 2024). By leveraging the metaverse's capabilities, the reviewed literature reveal that information users can augment their learning, research, and creative pursuits. Nevertheless, the findings from the reviewed literature showcase that metaverse also brings forth risks that demand attention from both librarians and information users. Therefore, concerns regarding privacy, digital equity, and accessibility must be effectively addressed. Librarians can also mitigate these risks by implementing stringent privacy protocols, ensuring equitable access to technology, and advocating for inclusive design standards (Wang *et al.*, 2022). Simultaneously, information users can also safeguard their privacy by being discerning about the information they share and staying informed about their rights and potential hazards within the metaverse.

Conclusion

The adventure through the metaverse within libraries is both promising and challenging, marking a significant evolution in traditional library services in the digital era. Libraries, long-standing pillars of knowledge and community engagement, are embracing this emerging digital landscape to redefine their role and expand their reach beyond physical confines. The metaverse presents libraries with unprecedented opportunities for innovative patron engagement, ranging from immersive storytelling experiences to virtual reference desks. Through the utilization of immersive technologies such as virtual reality (VR) and augmented reality (AR), libraries can enhance their offerings and connect with a broader audience than ever before. However, amidst the excitement of these new possibilities, libraries must also address pressing challenges such as digital equity, privacy concerns, and accessibility barriers. To tackle these challenges head-on, libraries are taking proactive measures to bridge the digital divide, safeguard user privacy, and foster inclusivity. Initiatives such as providing computer access, internet connectivity, and training programs ensure equitable access to the metaverse for all. Additionally, libraries are implementing stringent privacy policies, obtaining explicit consent for data collection, and prioritizing inclusive design practices to create inviting and accessible virtual environments. The cultivation of metaliteracy skills is pivotal for both librarians and information users, empowering them to critically assess, generate, and navigate digital content effectively. Through a variety of resources and strategies, individuals can acquire the necessary skills to thrive in the metaverse, ranging from online courses and workshops to interactive tutorials and collaborative learning communities. As libraries continue to explore the vast potential of the metaverse, they remain steadfast in their dedication to fostering inclusive, accessible, and empowering virtual environments. Therefore, embracing immersive technologies and promoting digital literacy, libraries will be at the forefront of shaping the future of information access and interaction for generations to come.

Forging the future directions

As libraries navigate through the metaverse, it's crucial to look ahead and sketch out the paths that will keep them in sync with the evolving digital landscape and immersive technologies. Here are some important areas to keep in mind:

- (1) Libraries should keep exploring and embracing immersive technologies like virtual reality (VR) and augmented reality (AR) in their services and offerings. This might mean expanding virtual reference desks, creating more immersive learning experiences, and hosting virtual events and workshops.
- (2) With the metaverse blurring the lines between the physical and digital worlds, libraries need to prioritize initiatives that enhance metaliteracy. This involves providing workshops, resources, and training programs to help users navigate the complexities of the digital realm, understand privacy and security issues, and develop critical thinking skills.
- (3) By collaborating with other institutions, tech companies, and content creators, libraries can enhance their presence and impact in the metaverse. Through partnerships, libraries can access new resources, share knowledge, and create more meaningful experiences for their users.
- (4) Libraries need to prioritize designs that are accessible and inclusive when developing virtual environments. This means ensuring that everyone, regardless of ability, can easily navigate virtual spaces, offering alternative navigation options, and incorporating features like text-to-speech and screen readers.

- (5) Libraries should keep investing in research and innovation to stay ahead of emerging trends and technologies in the metaverse. This could involve studying how users behave in virtual environments, experimenting with new immersive technologies, and collaborating with researchers to explore how the metaverse can be used in education and other fields.
- (6) Libraries have a vital role to play in advocating for policies that promote digital equity, privacy rights, and accessibility in the metaverse. By engaging with policymakers and advocating for the needs of their communities, libraries can help shape a future metaverse that prioritizes inclusivity and empowerment.

By focusing on these future directions, libraries can continue to thrive in the metaverse and fulfill their mission of providing access to information, promoting lifelong learning, and fostering community engagement in the digital era.

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