

ART EDUCATION BEYOND THE CLASSROOM: A NARRATIVE REVIEW OF METAVERSE APPLICATIONS

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Abstract: *This narrative review explores the application of metaverse in art education outside classroom and studio settings. With the ongoing innovation of immersive digital technologies it is increasingly possible to learn about art and its production in a virtual, interactive, collaborative space; so much that the metaverse can be seen as an exciting new territory for creative education. To set the scene for this field, a bibliometric study using Scopus was performed to analyze trends and themes in publications. An attempt was also made to incorporate PRISMA guidelines in the review process for increased transparency. Literature were found through the systematic search of Scopus, Web of Science, ERIC and Google Scholar augmented by reference screening and consisted primarily of peer-reviewed articles published between 2020 were conducted from 2020 to 2026. A narrative synthesis was employed to explore themes, such as conceptions of the metaverse in art education pedagogic affordances, effects on creativity and student identity, and challenges regarding access, curriculum negotiation integration equity ethical implications. Results suggest that the literature remains largely theoretical and exploratory but with limited empirical research on learning outcomes or inclusive practice. In summary, this review adds clarity regarding the present status of metaverse-based art education, and underscores the call for future evidence-based, pedagogically centered and representative research.*

Keywords: *Metaverse, Art education, Immersive learning, Virtual reality, Digital creativity*

Introduction

Recent advances in art education have been greatly reliant on the physical setup and atmosphere of classrooms, studios and galleries such that they are constructed by interacting with the media itself, peers and faculty.” (Waqar et al., 2025). This model, which has for some time been the backbone of creative development, is now being threatened by fast-paced technology advancements, changing expectations of learners and demand for open, inclusive and globally linked educational settings (Zou et al., 2025). Yet digital technologies have gradually pushed the limiting walls of art education out into new forms of creation, collaboration and engagement beyond the classroom (Alaba et al., 2026).

Within these changes, the metaverse is an innovative and transformative digital sphere that merges VR, AR, AI and a conceptual sense of immersive virtual worlds (Muchenje 2026). In educational settings, the metaverse provides learners with persistent, interactive environments that are conducive to the creation, exhibition and experience of art beyond physical and geographic constraints (Bassanelli et al., 2026). For art education, specifically, metaverse environments offer possibilities to re-enact studios and galleries replicate experiential learning including co-learning as well as creativity enabling experiences through multimodal immersive interactions (Deliyannis et al., 2026).

Scholarly interest in metaverse applications within education and art education specifically has expanded in recent years (Jagatheesaperumal et al., 2024), as the field is a natural fit for immersive and experiential technologies (Lehrman, 2025). Yet, the current research is still fragmented across various technological, pedagogical and disciplinary viewpoints. Ali et al (2023) posit that there is an urgent need for a coherent synthesising of the discourse, to critically consider how metaverse technologies are being conceptualised and utilised within art education; and the opportunities, challenges and future trajectory indicated.

Thus, the purpose of this narrative review is to investigate how the metaverse expands art education outside of conventional classrooms. Synthesising extant literature, we elucidate: the key applications of Metaverse-based art education; pedagogical methods and strategies employed by instructors, as well as its technological enablers with particular emphasis on their limitations or neglects; and implications for educators, learners and future research.

Method

This narrative review synthesizes the existing literature on how metaverse applications have been used in addition to and outside of formal classroom settings in art education. A systematic yet nonrestrictive search strategy was carried out, keeping in line with the goals of narrative review. Electronic searches were performed in major academic databases such as Scopus, Web of Science, ERIC and Google Scholar for peer-reviewed journal articles, conference proceedings and scholarly books. Manual searches of the reference lists of major articles were also performed to supplement data and identify influential or widely cited studies that were not identified in the initial database search.

A literature review informed the development of search terms, which were developed iteratively to include variations on terms such as *metaverse*, *virtual worlds*, *immersive technologies*, *virtual reality (VR)*, *augmented reality (AR)*, *art education or arts learning* and *creative education or digital studios*.

Performing keyword search:

("metaverse" OR "virtual reality" OR "augmented reality" OR "digital environment") AND ("art education" OR "art teaching" OR "art learning" OR visual arts) AND ("engagement" OR "interaction" OR "participation" OR collaboration) AND ("creativity" OR expression*OR design or innovation) and (curriculum or instruction*or pedagogy or assessment*)

The search was limited to publications in English and published from 2020 through 2026, approximately coinciding with the time when the immersive technology and metaverse domains have flourished.

A study is included if it explicitly discusses uses of metaverse-related tools in art education or similar contexts for creative learning. Excluded were papers that did not focus on education, which were not related to the arts, or technical contributions without pedagogical connection. Relevance, conceptual contribution, and the clarity of educational implications were the main foreground for choosing rather than a purely hierarchical approach to methodology to produce a balanced and meaningful synthesis which correlates with the divergent nature of the present review.

Scopus Bibliometric Analysis Findings

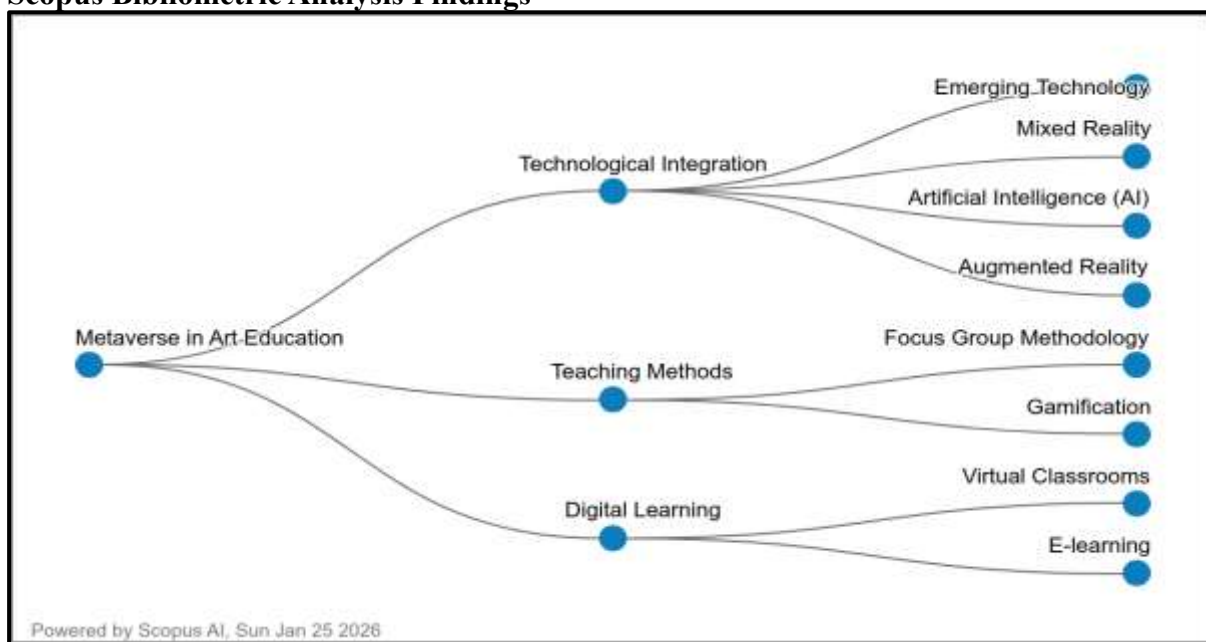


Figure 1: Concept Map Metaverse in Art Education

Source: Generated by the author(s) using Scopus AI

Figure 1 provides a diagrammatic representation of the conceptual framework of the research concerning the metaverse within the realm of art education as illustrated by a thematic map of networks. This figure visually represents the main concepts and related themes and illustrates the organization of scholarly thought regarding the metaverse in art education based upon various interrelated fields.

"Metaverse in Art Education," is the focal point of this figure and acts as the major hub for all other concepts and themes; the major themes branching from "Metaverse in Art Education," include three areas of focus for the examination of the metaverse in art education: Technological Integration, Teaching Methods and Digital Learning.

The Technological Integration area has the greatest amount of detail relative to the other two areas, and includes four additional themes: Emerging Technology, Mixed Reality, Artificial Intelligence (AI), and Augmented Reality. Thus, it can be inferred that the majority of existing literature supports the use of emerging digital technologies as the foundation for creating metaverse-based learning experiences in art education, particularly those involving immersion and intelligence.

The Teaching Methods area is connected to the two sub-themes of Focus Group Methodology and Gamification. These represent two different approaches to using the metaverse for the purpose of studying and implementing metaverse supported learning environments. As such, there appears to be an instructional and methodological approach to utilizing the metaverse in art education that is focused on student engagement and experiential learning.

The Digital Learning area is connected to Virtual Classrooms and E-Learning. This indicates that the majority of research on the metaverse is framing it as an extension or enhancement to existing digital learning environments, and not as a separate, new paradigm for teaching and learning.

In total, Figure 1 illustrates that the metaverse in art education is being researched in terms of technology, instruction and digital learning. The diagrammatic nature of the figure also illustrates the interdisciplinary nature of the research field and how the research is shaping our collective understanding of the metaverse in the field of art education.

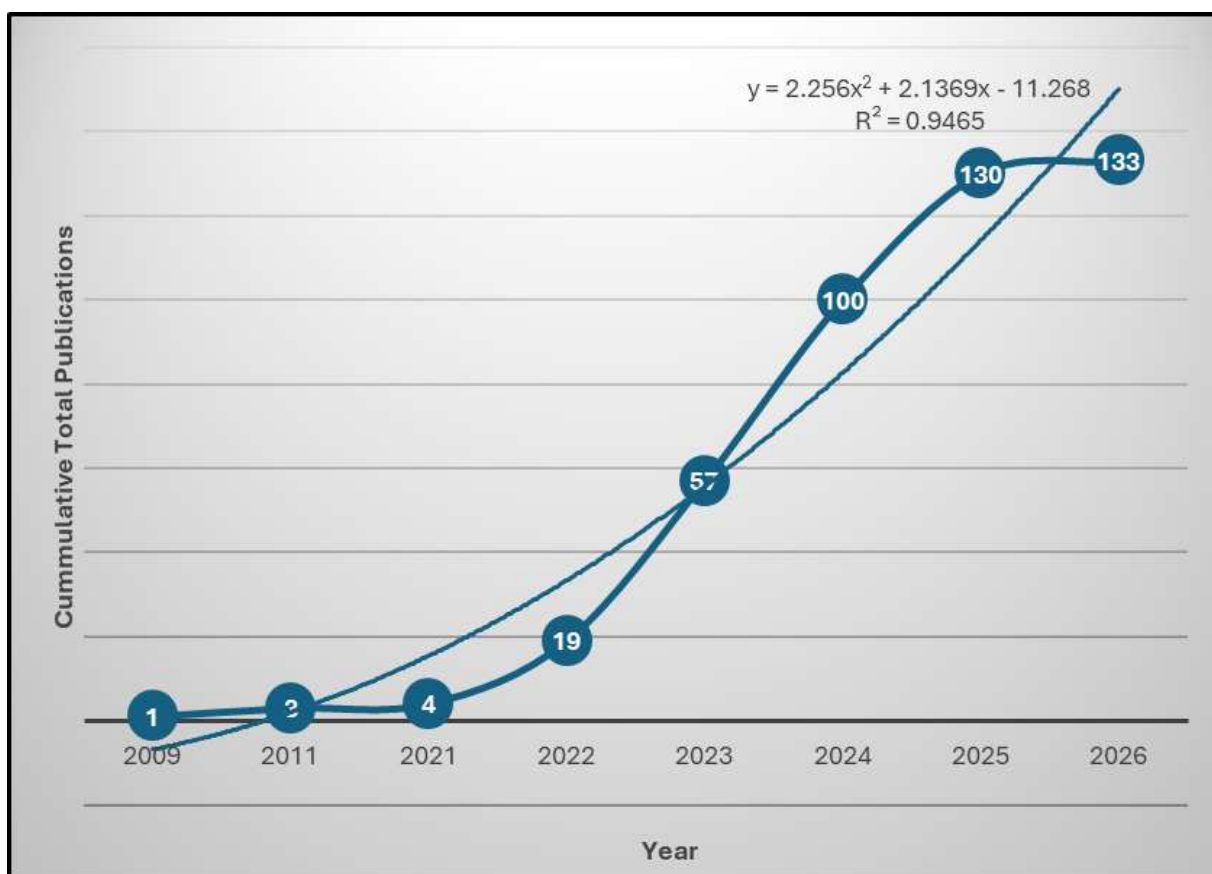


Figure 2: Cumulative Growth of Publications Over Time (2020-2025)

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

Figure 2 provides the ascending trend in terms of the articles published in respective years none indexed journals as well as part of database of Scopus© for highest number corresponding article production after 2021. A massive spike was noted in the output of articles from 2022 and till 2023 to 2025, reflecting a heightened pace of article generation as compared to the earlier years.

Furthermore, the high ($R^2 = 0.9465$) of the best-fit curve for the data also extends credence to the claim that there is an exponential rise in knowledge in this discipline.

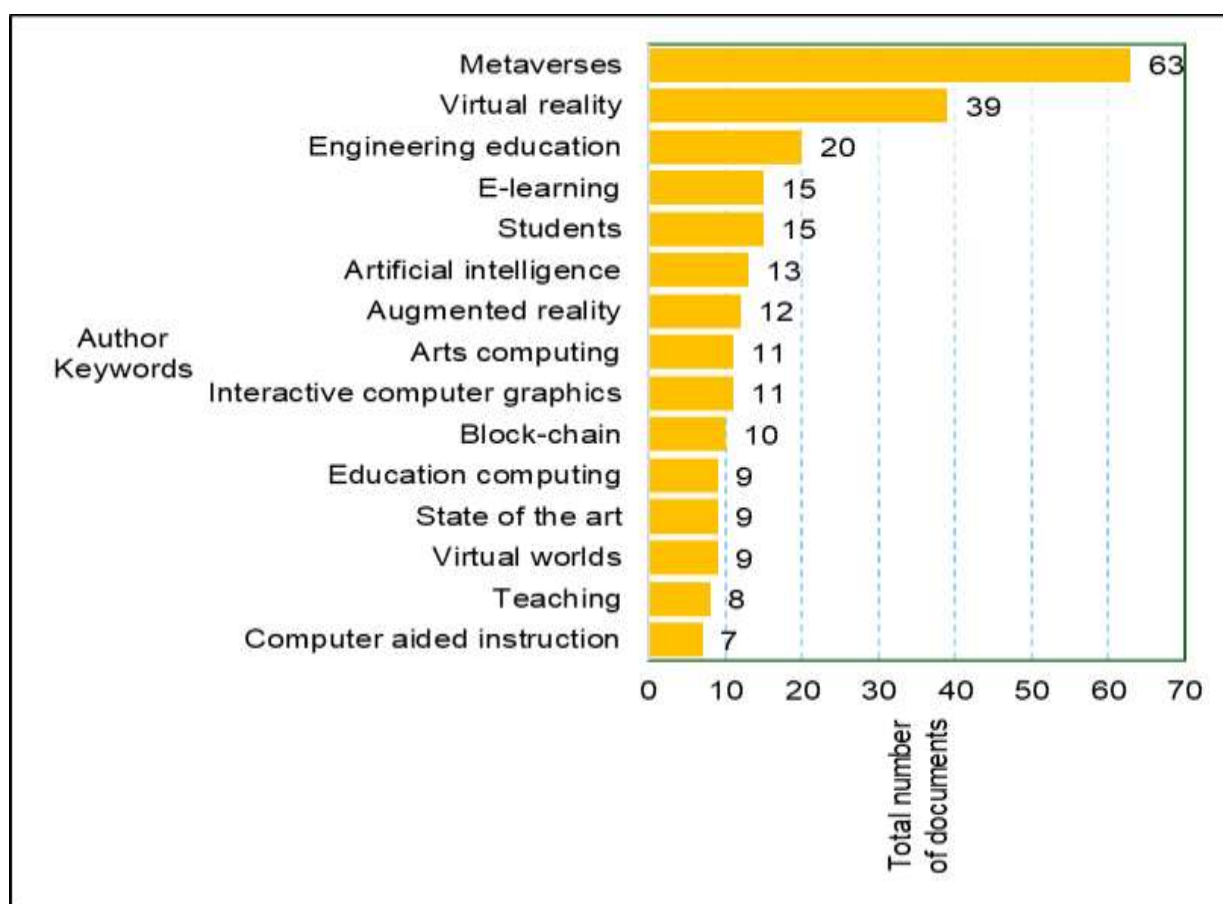


Figure 3: Frequency Distribution of Top 15 Author Keywords

Source: Generated by the author(s) using biblioMagika® (Ahmi, 2024)

To time evolve the study domain Figure 3 shows the temporal author's frequency per interest related to their studies. The researchers' key terms might be considered the most fundamental theme or topic of their research. The most widely used keyword is "Metaverses" which is mentioned in 63 documents, and closely followed by "Virtual Reality" (39) expression, showing that researchers are interested in immersive digital environments to do: People don't focus on products/devices yet. Educational terms like "Engineering Education" (20), "E-Learning" (15), "Students" (15) and Teaching (8)"suggest that the literature is pedagogic in nature. Last, keywords of technology concept including "Artificial Intelligence" (13), "Augmented Reality" (12), "Arts Computing" (11), "Interactive Computer Graphics" (11) and "Blockchain" (10) indicate a merging of different computational technologies in many disciplines. Generally, the fast-rising number of articles stems from metaverse technologies, immersive digital environments and novel ways to learn.

Discussion

Synthesis Analysis

1. Defining the Metaverse within the context of Art Education

There is broad consensus among researchers about the nature of the Metaverse which includes the combination of virtual reality (VR), Augmented Reality (AR), Mixed Reality (MR), and Persistent Virtual Worlds which provide individuals with the opportunity to engage with one another socially and creatively in digitally created, shared spaces (Dhillon & Tinmaz, 2024). In addition, within the realm of art education, researchers have developed definitions of the Metaverse which include it as an extended learning environment or "ecosystem" that fosters experiential, participatory, and networked forms of artistic expression (Buragohain et al., 2026). As the concept of the Metaverse continues to be explored through research, some authors are focusing upon its technical aspects (e.g., 3D environments, avatars, persistence) while others are exploring how the Metaverse can serve as a socio-culturally constructed space for students to develop their own meanings, and form identities around their creative practices (Christou et al., 2025). The absence of a single definition for the Metaverse indicates the infancy of this area of study and suggests a continued need for developing conceptual clarity specifically within the context of Art Education.

2. Pedagogical affordances and learning opportunities

A major area of focus across the studies reviewed has been the pedagogical affordance of Metaverse-based learning environments to expand the reach of art education outside of traditional classroom settings (Shi & Park, 2024). Some of the reported benefits include increased student motivation, engagement in learning, increased use of experiential and immersive learning methods, and greater opportunities for collaborative work without geographical constraints (Damaševičius & Sidekerskienė, 2024). For example, the creation of virtual studios, galleries, and exhibitions allows students to create, display, and review their artwork in real-time; thus, providing them with peer feedback and opportunities for cross-cultural exchange (Liu & Wang, 2025). However, while many of the studies report that the Metaverse provides students with opportunities for increased creativity and experimentation, they also note that the novelty of these experiences may cause temporary increases in perceived benefits. Additionally, the studies indicate that current evidence regarding the impact of the Metaverse on long-term learning outcomes remains underdeveloped (Shi & Park, 2024); and further highlights the gap between the enthusiastic conceptualization of the Metaverse's potential and the rigorous educational evaluations required to fully understand the implications of using this technology.

3. Creativity, Identity, and Artistic Practice

The Metaverse has been described as a space that allows individuals to experiment with their identities, materials and authorship (Jiang et al., 2026). Using avatars as well as digital tools allow students to create new ways of expressing themselves and representing their identity, thus challenging the traditional notion of embodied representation in the arts and the authenticity of artistic expression (Ouhni et al., 2025). There are some researchers who believe that this type of virtual world will offer students greater freedom to be creative, and will provide opportunities for those students who may have been excluded from traditional physical based studio environments due to marginalization. On the other hand, there are critics of the Metaverse that have expressed concern over the disembodiment of artistic

practice and the lack of the sensory and tactile experience inherent in most forms of art. Thus, we see an ongoing discussion or debate concerning whether virtual and physical forms of artistic practice can work together instead of against each other.

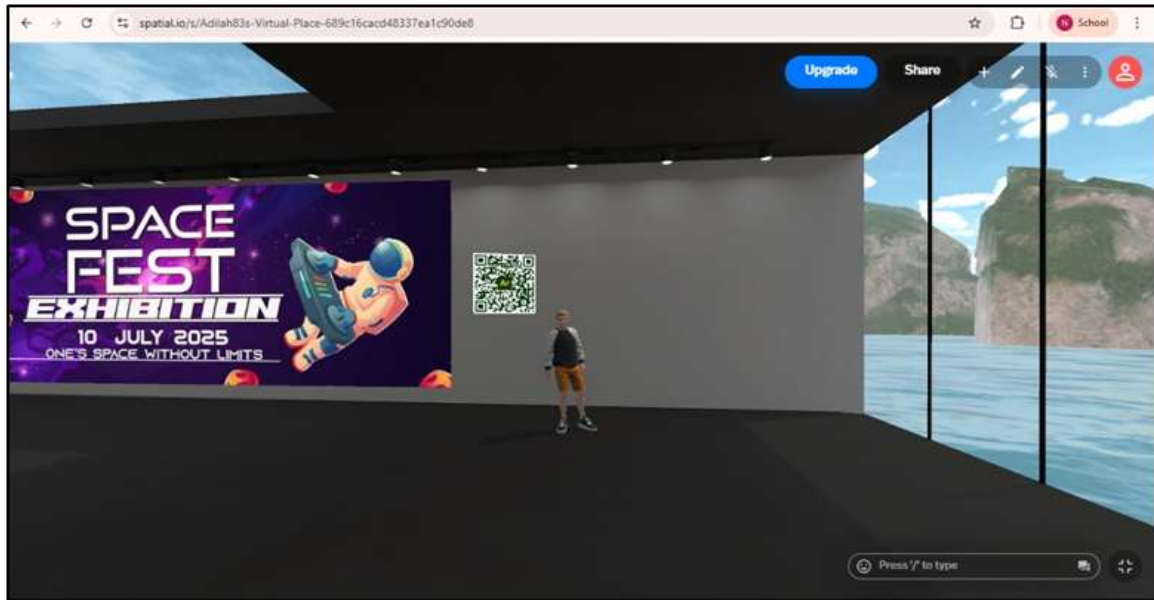


Figure 4: Spatial io Graphical User Interface (GUI), Actions Setup (Screenshot)
Source: (Adilah,2026)

Figure 4 depicts an immersive virtual exhibition environment for the Space Fest Exhibition 10 July 2025. The virtual environment includes a large thematic digital poster that communicates the event's identity and an interactive QR code that provides users with access to additional information and resources beyond the virtual environment. A digital avatar on screen represents the user and facilitates their movement through the virtual environment; enhancing the user's sense of presence and spatial awareness. The virtual environment is further enhanced by an open glass wall that visually connects the interior of the virtual environment to an exterior natural landscape. In general, Figure 4 illustrates how the combination of visual communication, interactivity, and immersion in the design of virtual exhibition environments, such as the one depicted in the figure, can enhance the effectiveness of hosting and promoting digital events.

4. Challenges, Limitations, and Ethical Concerns

As noted in the literature above, while the Metaverse has great potential, it has numerous obstacles to overcome before it can be effectively implemented. As stated in Musekiwa et al., (2025), the major obstacles include access issues, costs associated with using the technology, the lack of digital literacy and the need for adequate hardware and software infrastructure. However, these issues not only limit access to the Metaverse for all students but also raise questions related to digital equity (Musekiwa et al., 2025). Furthermore, the use of the Metaverse raises ethical considerations including the privacy of student data, the commercialization of student created content and the influence of corporate sponsored platforms on educational values (Musekiwa et al., 2025). Educators have reported uncertainty and lack of preparedness to integrate the Metaverse into their curricula, assess student learning using the Metaverse, and prepare for teaching in the Metaverse (Isiaku & Adalier, 2025). Collectively, these challenges indicate that in order for the Metaverse to be successfully adopted, educators will require technological investment as well as

pedagogical preparation, institutional support and a framework of policies (Sambo et al., 2025).

5. Implications and Research Gaps

In sum, existing studies reveal an emerging academic enthusiasm in the use of metaverse technologies in art education. However, majority of the research in the area is exploratory, conceptual and speculative in nature with little empirical sustenance (Waquar et al., 2025). This disparity reveals a substantial disconnect between techno-ecstatic culture and data-driven educational practice.

There is an evident call for more thorough research with better methodological techniques, particularly longitudinal studies and learner-centered assessments that measure educational results over time. Critical views continue to be needed, however, to challenge power, inclusion, access and sustainability questions that are all too frequently underexplored despite the fact they are central to issues of equitable educational innovation.

From a practice/policy perspective, the results highlight how innovations in the metaverse should take steer from clearly defined pedagogical goals rather than the urg to a technology lead agenda. Stakeholders in education must continue to advocate for integration that enriches learning environments, supports artistic development, and meets learners' needs.

Future studies should not be based merely on the narratives of "it is possible," but rather develop strong, evidence-based models that illuminate when, how, and for whom Metaverse based art education works. This is necessary to lead to a sustainable implementation and inform policy making, as well as form the metaverse into a credible pedagogically grounded environment within art education (Raman et al., 2025).

Limitations

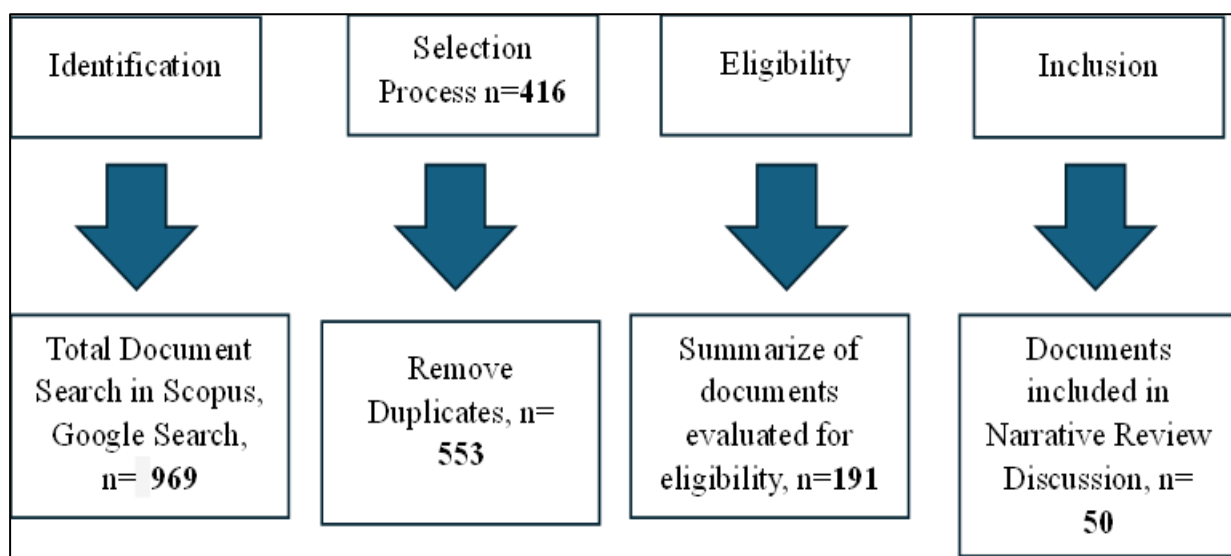


Figure 5: PRISMA-based Flow Diagram of Document Selection Process for Narrative Review

Eight unique search strategies were used, spanning foundational theory, immersive technology, comparative studies, and interdisciplinary applications in art education. The following limitations of this narrative review must be borne in mind when interpreting its findings. In the first place, in terms of methodology, this review was narrative rather than systematic or meta-analytical. Although this made it possible to be flexible and conceptually diverse drawing from interdisciplinary sources, also leaves that the search and selection of literature was not fully complete nor reproducible. Despite the use of various databases as well as reference list checks, it is possible that relevant studies, in particular unpublished; grey literature or research written in languages other than English may have been missed. This means that there is a potential for selection bias, and the generalisability of the meta-analysis is constrained by its global representativeness.

Secondly, the foundation of research on metaverse applications for art education is still quite young. A great deal of the published work is conceptual or exploratory, and few empirical studies use high quality or longitudinal study designs. Therefore, while there are claims and counterclaims about pedagogical effectiveness, learner achievement and creative development, these are generally speculative. The dearth of comparative studies and common evaluation protocols also brings limitations in the ability to make strong claims about best practices or long-term impact.

Third, synthesis issues due to the heterogeneous type of studies. However, directly comparing results is also challenging due to the diversity of ways research has defined technology, school context, learner group and disciplinary orientation. Moreover, variations in how terms including metaverse, virtual worlds and immersive learning are employed across the literature adds complexity to conceptualization and synthesis.

Last, but not least, the potential for author bias is present in narrative reviews as there may be interpretation and a thematic focus driven by the reviewer's judgment. Although attempts were made to incorporate balanced views and acknowledge controversies, some point of views may be obscured. It is suggested that future research could overcome these limitations by employing systematic or mixed-review methodologies, extending empirical research specifically in under-represented contexts and devising more explicit conceptualization and arrangement frameworks so as to promote evidence-informed practice and policy in metaverse based art education.

Conclusion

The objective of this meta-review was to examine the impact of metaverse technology on art education in ways that extend or challenge the conventional boundaries of a classroom setting by reviewing existing literature in terms of affordance (technology), pedagogy (practice) and learner experience (student) as well as identifying areas of challenge (problem). The meta-review found that the metaverse environments provided by technologies such as Virtual Reality (VR), Augmented Reality (AR), and Persistent Virtual Worlds offer learners new opportunities for experiential learning, collaborative creative production and increased access to an artist's process. However, the meta-review also indicated that while there are many conceptual and exploratory studies related to metaverse-based learning environments, the field is currently underdeveloped in terms of empirical research that examines the long-term educational impacts of using metaverse-based learning environments, curriculum development and the assessment of student learning within metaverse-based learning environments. In addition, the initial conceptual ambiguities, variable quality of available evidence and ongoing debates regarding

embodiment, equity and ethics are common themes throughout the literature. Through the consolidation of these findings, the meta-review has highlighted the current state of knowledge, and illustrated the necessity of moving beyond "possibility" driven narratives in order to realize the potential of the metaverse in the realm of art education. Future research should focus on longitudinal and comparative research, developing pedagogically grounded art specific frameworks for the use of metaverse technologies and examining learner experiences in diverse cultural and institutional settings. Furthermore, interdisciplinary research examining policy, teacher preparation and ethics will also be critical in establishing a body of evidence-based practices that inform the thoughtful and inclusive incorporation of metaverse technologies into the future of art education.

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