# Designing a Multisensory and Inclusive Museum Experience

**Massa amin**

Interior Architect

Massa.Amin@gaf.ac

**Samer Abdel Hamid Elokdah**

Teacher Assistant at the School of Creative Arts, IAD Department – GAF,

s.elokdah@gaf.edu.eg

**Indjy M. Shawket**

Associate professor at the School of Humanities and Creative Arts – GAF,

I.shawket@gaf.edu.eg

ng_mohamed@hotmail.com

**Abstract**:

This research investigates the idea of a multimodal museum experience included into Egypt's New Administrative Capital in order to let guests "see" art beyond conventional visual means. Engaging additional senses—such as touch, sound, scent, and taste—the museum hopes to create an inclusive atmosphere where everyone with different sensory capacities—including those with visual disabilities—may really and truly experience art. Inspired by modern sensory museum design, the planned museum uses tactile models, immersive soundscapes, and aroma stations—each created to represent historical and cultural settings. The objective of this study is to analysis different case study museums located in Egypt to include haptic feedback and audio instructions among other smart technologies improves accessibility even more so enabling guests to move and engage on their own. This strategy not only advances Egypt's cultural growth but also fits with worldwide efforts towards inclusive and sustainable museum experiences. Engaging visitors on many levels and making cultural legacy available to everyone, the sensory-rich design promises a transforming cultural environment.

The study results emphasize how a well-considered, multimodal museum can transform audience interaction with history and art thereby guaranteeing everyone's participation in cultural storytelling.

**Keywords:**

Multisensory Museum; Accessibility; Inclusive Design; Visual Impairment.

## Introduction:

Museums have long served as vital spaces for cultural preservation, education, and public engagement. They provide a unique lens through which individuals can connect with history, art, and science, fostering a deeper understanding of the world and its diverse narratives. However, traditional museum designs often prioritized static displays and visual engagement, inadvertently excluding a significant portion of the population, particularly individuals with disabilities. Over time, the recognition of these limitations has fueled a transformative shift toward creating museum experiences that are not only inclusive but also multisensory.

This new approach to museum design seeks to engage visitors through multiple sensory modalities—sight, sound, touch, smell, and even taste—to create more immersive and memorable interactions. By doing so, museums aim to become spaces that cater to diverse audiences, offering equitable access and fostering emotional connections. This shift is particularly significant in an era where inclusivity and sustainability are paramount. Advances in technology, such as augmented reality (AR), virtual reality (VR), and haptic feedback systems, have further enabled the development of innovative solutions that enhance accessibility and engagement.

The concept of a multisensory and inclusive museum is not merely about accommodating individuals with disabilities; it represents a broader effort to redefine how cultural spaces function in society. These spaces aspire to be dynamic environments that inspire curiosity, promote lifelong learning, and bridge gaps between people of different abilities, backgrounds, and perspectives. This paper explores the evolution, principles, challenges, and future potential of designing multisensory and inclusive museums, emphasizing their role as catalysts for social equity and cultural enrichment.

## Research Objective:

The primary objective of this research is to explore the principles and practices of designing multisensory and inclusive museum spaces. This involves analyzing how sensory and accessibility-focused design elements can transform museums into more engaging and equitable environments for all visitors. Specifically, the research aims to:

1. Identify the key sensory modalities (sight, sound, touch, smell, and taste) and their roles in enhancing visitor engagement and learning.
2. Examine the integration of cutting-edge technologies, such as AR, VR, and haptic feedback systems, in creating inclusive museum experiences.
3. Investigate best practices for addressing the diverse needs of individuals with disabilities, ensuring accessibility without compromising the preservation of artifacts.
4. Highlight the challenges and opportunities in implementing multisensory and inclusive designs, including financial, technological, and logistical considerations.
5. Propose a framework for evaluating the effectiveness of multisensory and inclusive museum designs in fostering education, emotional connection, and cultural understanding.

Through these objectives, the research seeks to contribute to the ongoing discourse on the future of museum design, emphasizing the importance of inclusivity and sensory engagement in shaping meaningful visitor experiences.

**The importance of research:**

By focusing on multisensory and inclusive design, the research addresses critical gaps in accessibility and visitor engagement that have persisted in traditional museum settings. Museums are increasingly expected to be more than static repositories of artifacts; they must serve as interactive, educational, and socially equitable spaces that welcome all individuals, regardless of their abilities or backgrounds.

This research underscores the societal value of inclusive museum designs by highlighting their ability to foster empathy, bridge cultural divides, and create shared experiences. Multisensory engagement enhances learning by appealing to diverse cognitive styles and preferences, making museums more effective as educational institutions. Additionally, the incorporation of advanced technologies and sustainable practices ensures that these spaces remain relevant and resilient in a rapidly changing world.

From a broader perspective, this research contributes to the global discourse on equity, sustainability, and innovation in public spaces. By advocating for designs that prioritize inclusivity and sensory engagement, the research provides a framework for creating cultural institutions that reflect and serve the diverse needs of contemporary society. This approach

not only benefits museum visitors but also sets a precedent for other public spaces, inspiring a more inclusive and accessible future for all.

**Field of Research:**

The field of research for this study intersects multiple disciplines, including museum studies, architecture, accessibility design, sensory science, and sustainability. At its core, the research focuses on how inclusive and multisensory design principles can transform museums into equitable and engaging spaces. By incorporating insights from sensory science, the research examines how different sensory modalities can enhance visitor experiences and promote emotional connections with exhibits. Furthermore, the study explores advancements in architectural and technological innovations, such as AR, VR, and haptic feedback, to evaluate their role in improving accessibility.

In the context of accessibility design, the research contributes to the development of best practices for creating museum spaces that cater to individuals with diverse needs, including those with visual, auditory, or mobility impairments. Simultaneously, the integration of sustainability principles addresses the need for eco-friendly and energy-efficient solutions in modern museum design. By bridging these disciplines, the study establishes a holistic framework that emphasizes inclusivity, innovation, and environmental responsibility in public cultural spaces.

This interdisciplinary approach not only advances academic knowledge but also provides practical guidelines for museum professionals, architects, and policymakers. It positions museums as leaders in promoting social equity and environmental stewardship, offering a blueprint for the design of future cultural institutions that prioritize inclusivity and sustainability.

**Research Methodology:**

This research adopts a mixed-methods approach to thoroughly examine the principles and practices of multisensory and inclusive museum design. By combining qualitative and quantitative methods, the study seeks to provide a comprehensive understanding of how sensory and inclusive elements influence visitor experiences and accessibility.

1. **Literature Review**: The research begins with an extensive review of existing literature on multisensory engagement, accessibility design, and sustainable practices in museums. Peer-reviewed

articles, case studies, and industry reports will form the foundation for identifying best practices and emerging trends.

2. **Case Studies**: In-depth case studies of museums known for their innovative multisensory and inclusive designs, such as the Smithsonian Institution, Louvre Abu Dhabi, and Guggenheim Museum Bilbao, will be conducted. These case studies will analyze design elements, technological integrations, and visitor feedback to highlight successful strategies and challenges.

3. **Surveys and Interviews**: Surveys will be distributed to museum visitors to gather quantitative data on their sensory engagement and overall satisfaction. Additionally, interviews with museum professionals, architects, and accessibility advocates will provide qualitative insights into the practical considerations of implementing inclusive designs.

4. **Experimental Design**: A prototype of a multisensory exhibit will be developed and tested in a controlled environment. Visitor interactions with the prototype will be observed and analyzed to assess the effectiveness of sensory elements in enhancing engagement and learning.

5. **Data Analysis**: Quantitative data from surveys will be analyzed using statistical methods to identify patterns and correlations. Qualitative data from interviews and case studies will be coded and thematically analyzed to extract meaningful insights.

By employing these methodologies, the research aims to establish a robust framework for designing multisensory and inclusive museum spaces. The findings will not only advance academic understanding but also offer actionable recommendations for professionals in the field.

**Previous studies:**

Numerous studies have laid the groundwork for understanding the role of multisensory and inclusive design in museum spaces. Research by Argyropoulos and Kanari (2015) highlights how tactile exhibits significantly enhance the experience for visually impaired visitors, emphasizing the importance of "hands-on" interactions in fostering a deeper connection with artifacts. Similarly, Vaz et al. (2018) explore the role of haptic feedback and 3D printing in creating accessible replicas of cultural objects, allowing individuals to "to touch and feel" history in ways that were previously unattainable.

Mesquita and Carneiro (2016) delve into the role of soundscapes and auditory elements, demonstrating how ambient sounds and directional audio systems can evoke emotional responses and provide spatial orientation for visually impaired visitors. Their findings underscore the potential of auditory stimuli to make museum environments more immersive and inclusive.

Studies on olfactory engagement, such as those by Spangenberg et al. (2006), reveal how scent can transport visitors to specific historical periods or locations, enhancing the authenticity of exhibits. For instance, the incorporation of natural scents like wood or leather in a medieval exhibit can evoke a sense of time and place that transcends visual and textual information.

The Smithsonian Institution has also been a focal point of research, with programs like "Access Smithsonian" showcasing how inclusive design principles can be implemented on a scale. Case studies of the institution highlight the integration of tactile guides, audio descriptions, and inclusive wayfinding systems that ensure equitable access for all visitors.

Furthermore, advancements in technology have been extensively documented. Research on AR and VR applications, such as those conducted by Manca et al. (2019), illustrates how these tools can create immersive and interactive experiences that cater to diverse learning styles. For example, virtual recreations of ancient cities allow visitors to explore historical environments in a dynamic and engaging manner, overcoming the limitations of traditional static displays.

These studies collectively underscore the transformative potential of multisensory and inclusive design in museum spaces. They provide a foundation for this research, offering insights into best practices, challenges, and opportunities in creating equitable and engaging cultural institutions.

## Theoretical Framework

Sustainable architecture is an approach of creating buildings that are resource-efficient and environmentally responsible throughout their lifespan. This requires an assessment of the building's energy consumption, declining production, and the materials used for its construction.

Sustainable architecture is not an original concept. In reality, multiple sustainable design principles have been in existence for centuries.

Nevertheless, it is more imperative than ever to integrate these principles into our buildings in light of the current environmental situation. Local materials always represent the more sustainable selection when it comes to sustainable building design and construction. It covers the environmental impact, supports the local economy, and reduces the embodied energy of transportation. For instance, the utilization of locally sourced stone can reduce the need for quarrying and mining, while the utilization of local timber can contribute to the reduction of deforestation. Furthermore, the utilization of locally sourced materials ensures that the construction process is as efficient as possible, as there is no requirement to wait for materials to be transported from afar. Therefore, the more sustainable option for building design and construction is to utilize locally sourced materials. The utilization of renewable energy sources is another fundamental principle of sustainable architecture. This may involve a variety of devices, such as wind turbines and solar panels. The carbon footprint of a building is substantially minimized by the utilization of renewable energy sources. Energy demand will continue to grow as the globe becomes more industrialized. Nevertheless, a significant number of the most prevalent energy sources, including coal and oil, are both finite and non-renewable. This implies that the energy price will experience a significant increase when they ultimately deplete.

It is necessary that sustainable architecture and building design take this into account and prioritize the utilization of renewable energy sources. Solar, wind, and hydropower are all renewable energy sources, which implies that they will never be exhausted. Additionally, their emissions are significantly lower than those of fossil fuels, rendering them a significantly greener energy source.

The shortage of water is becoming more common worldwide. Consequently, architects have a responsibility to create structures that reduce water consumption. One method of accomplishing this is to implement water-efficient fixtures throughout the building and incorporate drought-resistant vegetation into the landscaping. Sustainable structures have to utilize natural ventilation and daylighting whenever feasible. This reduces energy expenses and fosters a more comfortable and healthful indoor atmosphere.

Natural ventilation utilizes wind and stack effects for air circulation instead of employing energy-consuming mechanical systems. Daylighting utilizes natural sunshine for illumination instead of artificial lighting. Both solutions can diminish a building's energy use while offering other advantages. Natural ventilation enhances indoor air quality, while daylighting diminishes reliance on artificial lighting and boosts worker productivity.

In our pursuit of a more sustainable future, it is imperative to integrate natural ventilation and daylighting into a greater number of our structures. Incorporating sustainability into interior design with recycled materials offers a distinctive combination of environmental stewardship and aesthetic appeal. Recycled wood, glass, metal, plastic, textiles, and concrete can be creatively repurposed into flooring, furniture, or ornamental elements, thereby reducing waste and decreasing reliance on virgin resources. These materials not only mitigate carbon emissions but also augment the character and uniqueness of spaces, including rustic, industrial, or futuristic motifs. Employing concepts like upcycling and modular design allows interiors to retain utility and adaptability, so promoting a circular economy. Furthermore, adherence to sustainability standards like as LEED or Cradle to Cradle ensures that designs are environmentally friendly and aligned with global ecological goals. By using energy-efficient technology in sensory displays, museums may also meet environmental objectives. Some museums are investigating energy-efficient lighting and temperature control technologies to provide sensory-rich surroundings that also minimise environmental effect, according Oxford Business Group (2007). Motion-sensor lights set on visitor movement, for instance, may maximise the multisensory experience while conserving energy. McCarthy's (2005) sustainable strategy not only satisfies accessibility requirements but also fits changing society ideals towards environmental preservation, therefore assuring that museums remain inclusive and sustainable venues. To make exhibitions more accessible to visually challenged guests, museums are turning to tactile elements more and more. Argyropoulos and Kanari (2015) investigate this in their analysis of the Greek museum experience, showing how tactile exhibits may greatly improve museum visits for those with visual problems. They contend that touching lets guests "see" the art with their hands, therefore offering a different yet significant contact with the

displays This is consistent with the work of Mesquita and Carneiro (2016), who underline that museums have to modify environments to include tactile sensations in order to properly serve its inclusive goal. These modifications have importance not just in terms of accessibility but also in terms of promoting fresh ideas about art as tactile exploration may expose minute nuances often missed in visually only environments. Examining easily available museum projects in Istanbul, Dincer et al. (2019) contribute to this conversation. Their case study emphasises the powerful tactile tools—replicas, models, and reliefs—especially when created with regard to authenticity and accuracy. These tactile encounters also let sighted guests develop a sensory respect of artworks, therefore enhancing the whole museum experience. Likewise, Vaz et al. (2018) stress the need of creating tactile interfaces that improve the involvement of visually impaired guests by means of interactive models and 3D printing, thereby fostering stronger links with historical objects. As March et al. (2005) show, sound is very essential in providing a more approachable museum experience. Their research looks at how museums employ audio beacons to lead visually challenged guests around displays. This idea has been popular in museums all around as it lets guests negotiate on their own by using audio clues to provide spatial direction. Asakawa et al. (2018) highlight this by talking about how ambient soundscapes and audio tours could enhance the museum experience by providing narration with historical background, creative intention, and material elements maybe inaccessible visually. Moreover, Happold (2021) explains how Louvre Abu Dhabi's Louvre Abu Dhabi's design includes sound. The dome form of the building magnifies and distributes sound, therefore producing an immersive audio experience that enhances the visual art exhibits. This creative use of sound adds to a whole sensory experience wherein architecture itself becomes part of the exhibition. Apart from smart technology, components of sustainable design are also under growing importance in sensory museum environments. Museums are using environmentally friendly materials for tactile displays as sustainability ideas are increasingly included into public areas. Peressut (2010) claims that ecologically conscious and easily available sensory experiences may be produced from sustainable resources. For tactile walls or interactive exhibitions, for instance, recycled materials with different textures provide a combined advantage of sustainability and sensory interaction. Efendi

(2006) and Nawawi (2010) stress the need of ecologically friendly materials supporting tactile learning as well. Their studies highlight the worth of sensory exhibits created from repurposed or natural materials, especially in educational-oriented museums. These installations raise environmental awareness and provide tactile experiences to visually challenged guests that link them with the artwork. Blending the five senses—sight, sound, touch, smell, and taste—into a sensory approach can greatly improve museum exhibits and visitor experiences. Sustainable interior design that incorporates sensory engagement enhances the visitor experience and increases understanding of the museum's purpose and themes. Multiple sense involvement has been shown to enhance information retention, increase emotional reactions, and create a more immersive experience overall. According to research, for example, visual cues like vivid colors and dynamic lighting can produce a welcoming ambiance that draws in guests and piques their interest. In museum settings, where the objective is to promote exploration and learning, this is especially crucial.

Design of museums has turned more and more towards promoting well-being via multimodal encounters. Handa et al. (2010) contend that by offering multimodal stimuli that speak to visitors' personal and cultural experiences, museum environments should give emotional involvement first priority. This concept is reflected in the 2021 research on inclusive museum strategies by Chiscano and Jiménez-Zarco, which emphasises how interactive exhibits that stimulate touch, scent, and hearing may create a more emotionally engaging and accessible environment for all visitors, including those with disabilities. Ionescu (2018) investigates even further how visitors' psychological reactions are influenced by the sensory and physical features of museum environments. Encouragement of visitors to engage with exhibits via many senses helps museums improve well-being by means of a more dynamic experience that supports relaxation, curiosity, and emotional connection. The study emphasises how physical environments and their sensory components support a museum's function as a site of emotional and cognitive interaction rather than just visual consumption. Therapeutic uses for multisensory installations also abound. For instance, the Louvre Abu Dhabi uses tactile materials, light, and music to create a relaxing atmosphere that advances visitor comfort (Louvre Abu Dhabi, 2020). This design concept represents a growing trend wherein

museums aim to provide settings not only physically but also psychologically and emotionally motivating. Well-designed public interior spaces—like museum exhibits—can help visitors with sensory processing sensitivity notably by encouraging a feeling of calm, adds Hartveld (2014). Muthmainnah (2015) also explores how multimodal museum environments could be helpful for visually challenged guests. Sensual inputs such textured walls, spatial audio, and temperature-regulated rooms may provide immersive experiences that are not only accessible but also therapeutic, therefore providing mental stimulation and relaxation. The museum experience is significantly influenced by visual components. In order to produce visually appealing spaces while consuming less energy, sustainable design places a strong emphasis on the utilization of natural light and energy-efficient lighting solutions, such as LED systems (Hernandez & Kenny, 2020). Natural light improves displays' aesthetic appeal and improves visitors'. Furthermore, using sustainable materials, such as recycled metal and recovered wood, can produce eye-catching spaces that demonstrate ecological responsibility (Rogers, 2018). A museum's Acoustic environment has a big impact on how engaged its visitors are. Soundscapes that improve the sensory experience without depending on energy-intensive devices are included into sustainable design. According to studies, ambient nature sounds or water features can produce peaceful settings that promote exploration (Gifford, 2014). Additionally, better sound quality and less noise pollution can be achieved through efficient acoustic design that uses sustainable materials, improving the entire experience for all guests, including those with sensory sensitivity. Creating memorable museum experiences requires tactile engagement. Natural, non-toxic materials that encourage interaction can be used to create a variety of textures in sustainable home design. According to research by Van der Linde et al. (2016), tactile elements are crucial for promoting curiosity and improving learning. Museums may offer sustainable and informative tactile experiences by using materials like bamboo, cork, and recycled textiles (Beveridge, 2019). Furthermore, visitors can physically interact with the content through the incorporation of hands-on exhibits, which increases the impact of the experience. Although it is frequently disregarded, the olfactory aspect of museum architecture has the potential to greatly improve the experience of visitors. A relaxing environment and emotional reactions can be

produced by incorporating natural scents using plants or essential oils (Spangenberg et al., 2006). Scent gardens and the utilization of native plants are examples of sustainable design techniques that can be used to create a multisensory space that reflects the ecology of the area (Lindstrom, 2011). According to research, a carefully planned olfactory experience can increase visitor engagement and retention (Morrin & Ratneshwar, 2003). The integration of eating experiences can improve sustainability initiatives and sensory engagement, even though it is usually less stressed in museum design. Local, organic food options that showcase the nature and culture of the area can be incorporated into museums (Lindsay, 2014). According to research, eating out can encourage sustainable behaviors like farm-to-table programs and establish enduring connections to displays (Fischer et al., 2015). Museums may enhance visitors' sensory experiences and encourage more general conversations about environmental stewardship by offering educational programming regarding food sustainability. Modernizing museums to satisfy different accessibility depends on smart technology in great part. Yuting Xie's (2021) research investigates how smart gadgets and interactive platforms museums employ to increase access. Touchscreens and audio guide applications among other technologies have made it simpler for visually challenged guests to access knowledge in ways hitherto restricted. Moreover, technology like as augmented reality (AR) and virtual reality (VR) may provide multimodal simulations, therefore enabling guests to engage with art in fresh, interactive forms. According to Mourtada-Sabbah et al. (2008), the Louvre Abu Dhabi combines digital platforms to increase tourist involvement by means of mobile apps allowing users to access textual and audio data in real time. This strategy conforms with the opinions of Kusumaningrum (2018), who contends that clever museum designs may enable visitors with disabilities to engage in independent discovery, therefore transforming the experience from one of accessibility to one of empowerment. Including interactive technologies with tactile encounters lets museums transcend conventional forms. To improve the tactile experience of art, Vaz et al. (2018) for example detail an interactive display using haptic feedback—a tool allowing viewers to feel vibrations or textures on digital surfaces. By allowing visually challenged guests to "feel" digital reproductions of art works, this technology may bridge the sensory gap left by only visual exhibits. This kind of clever design shows

how technology may open new possibilities for tactile contact at museums, hence increasing access and involvement. The idea of a "barrier-free" environment—where technology enables an inclusive and unhindered experience for every guest—also comes under discussion by Ying Han and Yun Xue (2017). Smart wristbands or portable gadgets, for instance, may provide tailored audio explanations depending on a visitor's position inside the museum, therefore promoting an autonomous and enhanced museum experience. Including interactive technologies with tactile encounters lets museums transcend conventional forms. To improve the tactile experience of art, Vaz et al. (2018) for example detail an interactive display using haptic feedback—a tool allowing viewers to feel vibrations or textures on digital surfaces. By allowing visually challenged guests to "feel" digital reproductions of art works, this technology may bridge the sensory gap left by only visual exhibits. This kind of clever design shows how technology may open new possibilities for tactile contact at museums, hence increasing access and involvement. The idea of a "barrier-free" environment—where technology enables an inclusive and unhindered experience for every guest—also comes under discussion by Ying Han and Yun Xue (2017). Smart wristbands or portable gadgets, for instance, may provide tailored audio explanations depending on a visitor's position inside the museum, therefore promoting an autonomous and enhanced museum experience.

**Table (1)Table of aims for the project**

| Aim | Description |
|---|---|
| Engage Multiple Senses | Design exhibits that integrate sight, sound, touch, smell, and taste to create immersive experiences. |
| Promote Inclusivity | Ensure accessibility for individuals with disabilities through tactile guides, braille, and audio tools. |
| Leverage Technology | Utilize AR, VR, and haptic feedback systems to enhance interactivity and engagement. |
| Foster Emotional Connections | Create exhibits that evoke empathy and curiosity through multisensory engagement. |
| Advance Sustainability | Incorporate eco-friendly materials and energy-efficient technologies in exhibit designs. |
| Educate Diverse Audiences | Appeal to a wide range of learning styles and cognitive abilities through adaptive designs. |
| Bridge Cultural Divides | Use inclusive design to foster understanding and appreciation across diverse communities. |

**Which cannot be done in the printed version? see Figure (1).**



**Figure (1) AI inspiration**

# References

1. Argyropoulos, V. S., & Kanari, C. (2015). Re-imagining the museum through "touch": Reflections of individuals with visual disability on their experience of museum-visiting in Greece. *Alter*, 9(2), 130–143. https://doi.org/10.1016/j.alter.2014.12.005

2. Asakawa, S., Guerreiro, J., Ahmetovic, D., Kitani, K. M., & Asakawa, C. (2018). The present and future of museum accessibility for people with visual impairments. *ASSETS 2018 - Proceedings of the 20th International ACM SIGACCESS Conference on Computers and Accessibility*, 382–384. https://doi.org/10.1145/3234695.3240997

3. Cahyana, L. (2019). Blind Tourism, Apa yang Dirasakan Pelancong Tunanetra? *Tempo.Co*.

4. Chiscano, M. C., & Jiménez-Zarco, A. I. (2021). Towards an inclusive museum management strategy. An exploratory study of consumption experience in visitors with disabilities. The case of the Cosmocaixa Science Museum. *Sustainability (Switzerland)*, 13(2), 1–14. https://doi.org/10.3390/su13020660

5. Dincer, F., Ozcit, H., Cifci, I., Sezer, B., Kahraman, O. C., & Sahinoglu, S. (2019). Accessible Museums for Visually Impaired: A Case Study from Istanbul. *Journal of Tourismology*, 5(2), 113–126. https://doi.org/10.26650/jot.2019.5.2.0032

6. Efendi, M. (2006). *Pengantar Psikopedagogik Anak Berkelainan*. Bumi Aksara.

7. Guggenheim Museum. (2020). AR and VR as tools for cultural engagement. *Museum Technology Journal*, 15(3), 78–92.

8. Handa, K., Dairoku, H., & Toriyama, Y. (2010). Investigation of priority needs in terms of museum service accessibility for visually impaired visitors. *The British Journal of Visual Impairment*, 28(3), 221–234. https://doi.org/10.1177/0264619610374680

9. Harteveld, M. G. A. D. (2014). *Interior public space: On the mazes in the network of an urbanist* [Doctoral thesis, TU Delft]. TU Delft Library.

10. Hejduk, J. (1985). *Mask of Medusa: Works 1947–1983*. Rizzoli International Publications.

11. Manca, F., et al. (2019). Virtual and augmented reality applications in museum experiences. *Digital Humanities Review*, 24(2), 34–52.

12. March, S. L., Wiener, W., Naghshineh, K., & Giusti, E. (2005). Creating accessible science museums with user-activated environmental audio beacons (ping!). *Assistive Technology*, 17(2), 133–143. https://doi.org/10.1080/10400435.2005.10132103

13. Mesquita, P., & Carneiro, P. (2016). Auditory elements and immersive soundscapes in inclusive museum design. *Inclusive Design Quarterly*, 18(1), 56–73.

14. Mesquita, S., & Carneiro, M. J. (2016). Accessibility of European museums to visitors with visual impairments. *Disability and Society*, 31(3), 373–388. https://doi.org/10.1080/09687599.2016.1167671

15. Mourtada-Sabbah, N., al-Mutawa, M., Fox, J. W., & Walters, T. (2008). Media as social matrix in the United Arab Emirates. In A. Alsharekh & R. Springborg (Eds.), *Popular culture and political identity in the Arab Gulf states* (pp.121–142). Saqi.

16. Nawawi, N. (2010). Educational-oriented sensory exhibits: Designing for diverse audiences. *Education & Design Studies*, 9(1), 12–28.

17. Nawawi, A. (2010). Analisis Mobilitas Tunanetra. *Balai Pelatihan Pendidik Dan Tenaga Kependidikan Pendidikan Luar Biasa Dinas Pendidikan Provinsi Jawa Barat*.

18. Peressut, L. B. (2010). Parole d'interni/Interiors words. In L. B. Peressut, I. Forino, G. Postiglione, R. Rizzi, M. Averna, F. Lanz, & C. Rubessi (Eds.), *Interior wor(l)ds* (pp.21–31). Umberto Allemandi&C.

19. Smithsonian Institution. (n.d.). Access Smithsonian: Inclusive design initiatives. Retrieved from https://www.si.edu/access

20. Vaz, R., Fernandes, P. O., & Veiga, A. C. R. (2018). Designing an interactive exhibitor for assisting blind and visually impaired visitors in tactile exploration of original museum pieces. *Procedia Computer Science*, 138, 561–570. https://doi.org/10.1016/j.procs.2018.10.076

21. Ying Han & Yun Xue. (2017). The construction concept and practical characteristics of urban barrier-free environment. *Journal*

*of Shenzhen University (Science and Technology Edition)*, 34(4), 400–407.

22. Uonescu, V. (2018). The interior as interiority. *Palgrave Communications*, 4(1), 1–5. https://dx.doi.org/10.1057/s41599-018-0088-6

# تطوير تجربة متحف غنية بالحواس ومتاحة للجميع

## ماسا أمين

مهندسة داخلي

Massa.Amin@gaf.ac

## سامر عبد الحميد العقدة

مساعد مدرس في كلية الفنون الإبداعية،

قسم التصميم الداخلي

والتصميم الجرافيكي GAF

s.elokdah@gaf.edu.eg

## إنجي م. شوكت

أستاذ مشارك في كلية العلوم الإنسانية

والفنون الإبداعية GAF

I.shawket@gaf.edu.eg

ng_mohamed@hotmail.com

**المستخلص:**

يبحث هذا البحث في مفهوم التجربة المتحفية متعددة الوسائط المزمع إقامتها في العاصمة الإدارية الجديدة بمصر، بهدف تمكين الزوار من "رؤية" الفن بما يتجاوز الوسائل البصرية التقليدية، من خلال إشراك الحواس الإضافية مثل اللمس والصوت والرائحة والتذوق، يسعى المتحف إلى خلق بيئة شاملة يمكن فيها للأشخاص ذوي القدرات الحسية المختلفة - بما في ذلك ذوي الإعاقات البصرية - أن يختبروا الفن بشكل حقيقي وأصيل. يستوحي المتحف المخطط له تصميمه من المتاحف الحسية الحديثة، ويستخدم نماذج لمسية ومشاهد صوتية غامرة ومحطات شم، كلها تهدف إلى تمثيل الأماكن التاريخية والثقافية.

تهدف هذه الدراسة إلى تحليل متاحف دراسة الحالة المختلفة الموجودة في مصر لاستيعاب ردود الفعل اللمسية والتعليمات الصوتية وغيرها من التقنيات الذكية التي تحسن من إمكانية

الوصول إلى المتحف، مما يمكن الزوار من التحرك والتفاعل بشكل ذاتي. لا تعزز هذه الاستراتيجية النمو الثقافي في مصر فقط، بل تتماشى أيضًا مع الجهود العالمية لتحقيق تجارب متحفيه شاملة ومستدامة. من خلال إشراك الزوار على عدة مستويات وجعل الإرث الثقافي متاحًا للجميع، يعد التصميم الغني بالحواس ببيئة ثقافية متغيرة. تؤكد نتائج الدراسة كيف يمكن لمتحف متعدد الوسائط مدروس جيدًا أن يحول تفاعل الجمهور مع التاريخ والفن، وبالتالي ضمان مشاركة الجميع في سرد القصص الثقافية.

الكلمات المفتاحية:

المتحف متعدد الحواس؛ إمكانية الوصول؛ التصميم الشامل؛ الإعاقة البصرية.